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WORLD PETROLEUM

Petroleum Industry's Financial Outlook • Critical Condition in British Oil • Deep Well Drilling 2000 Years Ago • Producing Fertilizer From Natural Gas • Motor Fuel of 1942 • Italy's Oil • World's Highest Pipe Line • Changing Trends in International Motor Fuel Trade •

JANUARY • 1932

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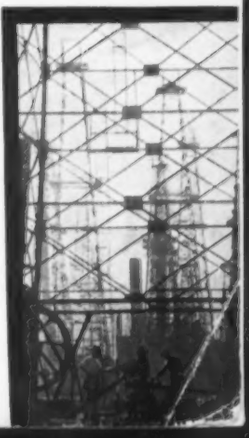

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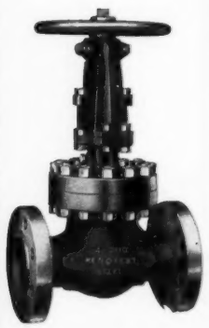

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JANUARY
1932

WORLD PETROLEUM

(Incorporating "Petroleum Equipment Exporter")

VOLUME III — NUMBER 1

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PETROLEUM

British Market Situation

IN certain directions there has appeared of late a growing disposition to adjust the price of petroleum products to existing conditions. The recent advance of quotations in Japan to counter-balance the decline in exchange value of the yen is a case in point. Reports have been in circulation that action would be taken by the important marketing organizations in the United Kingdom to revise price schedules so as to wipe out a part at least of the loss that is now being taken on every gallon of petrol sold to the British public. So far this action has not materialized although we are told that it may come in January. The position of the men responsible for the sales policy of some of the leading organizations toward previous efforts to put the marketing of petrol on a commercial basis has been that it would be "unpatriotic" to ask British motorists to pay more for their motr fuel.

This is a very high-minded and praiseworthy stand for the heads of British oil company organizations to take. If, as is calculated by the author of an article on the British market situation which appears elsewhere in this issue, the loss incurred at present rates is 3d per gallon the bill incurred by the various companies and their stockholders which must be charged off to patriotism will amount to a pretty penny in the course of a year, probably not less than £12,500,000.

Of course if patriotism can be combined with business to the extent of loosening the hold upon the British market of certain companies who have been placed at a particular disadvantage by the departure of the pound from the gold basis the loss in certain cases may be converted into an investment for future commercial advantage.

It may be that this is one of those rare but happy occasions when duty and opportunity combine. Whatever the intent of those responsible for conditions under which vendors of motor fuel in the British market not only give away their product but in instances pay something additional in the way of a premium tax for the privilege, the ultimate effect of this policy, if persisted in, will be to drive out of the United Kingdom those companies which are compelled to operate on a gold basis.

It might seem at first thought that this would be greatly to the advantage of the companies that were able to survive the struggle since it would remove a certain amount of competition. But it must not be lost to sight that the same groups that are represented in British sales territory also face each other in many other parts of the globe. It is not to be expected that powerful commercial organizations will submit to the destruction of their trade interests without some effort at retaliation and while they may be deprived of the opportunity to repay their injuries in the place where they are received it probably will not be impossible to find openings for such action elsewhere.

The situation that exists in the petroleum trade of Great Britain at the present moment, therefore, is of more than local or even national importance. It contains possibilities, unless sound judgment and fair dealing rule its handling, of precipitating a trade conflict of broad proportions and of as serious destructiveness as any the industry has seen. National feeling runs high in all parts of the world. The temper of the American people is on a sharp edge where issues of European origin are concerned. We speak for no one but ourselves when we express the opinion that if a concert of action is directed against American companies in the British market it is likely to have extensive repercussions unfortunate for the amicable progress of the international petroleum trade.

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Problem of the Tariff

IT is generally believed in the industry that there is a possibility that a tariff will be placed on oil at this session of Congress. Our own opinion is that new tariff schedules are unlikely but by no means impossible. Precedent is against tariff legislation at a session of Congress directly preceeding a presidential election. In fact practically all major tariff bills have been passed at the first post-election session.

To attempt general tariff revision now would be politically inexpedient and dangerous. A tariff bill must originate in the House. Once it reaches the Senate that body can strike out everything but the enabling clause and write a new bill. With different parties in control of each chamber experienced legislators seek to avoid the deadlock which would ensue.

It is well known, however, that there is nothing to prevent trying to attach an oil tariff rider to the revenue bill which this Congress will have to pass. An amendment of this nature could be made from the floor and would be germane to the bill, tariff being essentially a revenue measure.

Such a step would give a test vote under particularly favorable conditions. Traditionally the Republicans are for a tariff and the Democrats are against it, but in practice every member of Congress believes in protection for the produce of his home state. The speaker of the House is a Texan, Mr. Garner, and the passing of the House control to the Democrats has increased the power of the southern oil States.

Proponents of the tariff are working their people up to a strong feeling with the argument that they are fighting the big interests. It is probable that the two largest groups, Jersey Standard and Shell, being great international operators, are indifferent to the matter. Being far sighted they have doubtless made plans to rearrange their operations so as to discount the effect of a tariff. In spite of the charges which have been made we doubt that either concern will lift a finger to oppose the legislation. One of the things which makes the outlook for action favorable is that there is a strong, well organized movement for it and practically no opposition.

There is some difference of opinion as to what the effect of a tariff will be. It has been argued that it will wipe out America's export trade in petroleum products. The outlook for this business is distinctly unfavorable already as a result of more immediate causes, namely Russian and Roumanian overproduction and the abandonment of the gold standard by certain powers. It is generally recognized that under a tariff it will still be possible to retain both bunkering and export business through the power to import in bond and refine for export under a draw-back.

Some thoughtful oil men believe that the Oklahomans, at their own expense, are doing a good job for the Californians who may be the principal if not the sole beneficiaries of a tariff. No act of Congress can ever make Tulsa a seaport.

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Campaigning Methods

GREAT driving force and ingenuity have been shown in the tariff fight. Wirt Franklin has proved himself an organizer of much ability. He is undoubtedly the outstanding leader of oil independents.

These fights arouse an inordinate bitterness at times and often get out of hand. Some of the tactics which have been employed are not above question. Last year's threat to boycott New England products in Oklahoma because of New England's opposition to an oil tariff was a dubious measure. On a par with it is the recent unholy alliance of oil tariff advocates with eastern coal men to promote a tariff on oil. This is a cold blooded plan to exploit the consumer that any public spirited man could successfully challenge.

Sometimes in the heat of an intra-mural fight destructive forces are released and before preventative measures can be taken they get out of hand reacting dangerously to the injury of an entire industry.

The worst feature of the whole matter is that the tariff is being put forward as a cure-all for the ills of the industry when it is in fact nothing of the kind. An import tax will force serious and expensive shifting of trade arrangements but it is not likely to prove of any real, permanent benefit.

The Oil Industry is a sick industry. While extravagant claims are being made for this patent medicine the patient lanquishes, and it is difficult to get serious consideration for the less spectacular remedies which the situation calls for. It would be a wonderful thing if the patient could be cured by one bottle of Dr. Franklin's Golden Medical Discovery, but he has to learn to live differently to be well again. This involves swearing off over-production, curing himself of bad marketing habits and taking the economy reducing diet.

Strangely enough very little has been said so far about what to our mind is the strongest argument for a tariff. As long as oil moves freely in world commerce the oil problem will be a world problem and as such it is a particularly difficult thing for America to deal with because of our dual system of government. A prohibitive tariff (and such a one is proposed) would at least isolate the American oil industry behind a Chinese wall within which it might be easier to apply the measures which have been suggested above.

Many Americans have long been sick of foreign diplomatic entanglements. This feeling has lately been extended to commercial relationships and it is no exaggeration to say that there is even a body of thought in the country which would gladly withdraw from both.

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Roumanian Crude Exports

EUROPEAN market complications have been both numerous and serious during the greater part of 1931. Another disturbing factor appears about to be added by the resumption of export shipments of Roumanian crude which have been virtually prohibited since 1929. The new policy has been inaugurated by the issuance of licenses to producers to export 15 percent of the total crude production, or about 6,000,000 bbl. per year. Presumably a market will be forced for this oil just as it was with the increased exports of refined products, which in January to June, 1931, amounted to about 3,500,000 bbl. greater than in the same period of last year regardless of a falling consumption. The only ray of hope would appear to be Roumania's announced willingness to agree to attend a meeting of major world producers to restrict production and strengthen prices by agreement.

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World Petroleum's Progress

IN THE initial number of WORLD PETROLEUM, published two years ago the following statement of editorial purpose appeared:

WORLD PETROLEUM has been established to meet the need for an international publication to serve the petroleum industry of the whole globe. It will deal only with matters of international importance affecting production, refining, transportation and marketing. The aim of the publisher will be to make this journal informative, interesting and authoritative. The key statistics covering world production and movements will be presented graphically. Correspondents at strategic points throughout the world will collect facts bearing on the industry, while its trends and problems will be dealt with in special articles by men of international standing. The policies of WORLD PETROLEUM will be independent, progressive, constructive and non-sectional. This journal will be dedicated to fostering the advancement of the industry along sound lines—encouraging the orderly utilization of the world's petroleum resources and promoting a spirit of harmony and mutual understanding among those engaged in the business throughout the world. In this important work we solicit the cooperation of all those who have the welfare of the industry at heart.

It is a matter of deep satisfaction to those responsible for the conduct of the journal to contemplate the degree to which it has fulfilled its self-declared mission and to acknowledge the friendly reception it has received from members of the petroleum industry in all parts of the world. With their cooperation we shall continue to build along the lines followed heretofore in the effort to make WORLD PETROLEUM a constructive factor in the progress of the industry.

Petroleum Industry's Financial Outlook

Will Oil Shares Advance in 1932? Are Brighter Days Just Ahead? Looking Along the Path Toward Recovery. An Effort to Answer Some of the Questions Being Asked Today.

By Russell Palmer.

ONE of the the things every man in the petroleum industry wants to know is when the oil shares are going to advance. Since they are lower than they ever have been before there is some point to the question. Sometimes it is asked with an eye to personal profit. More often it comes from some thoughtful executive who knows that the confidence of the investing public is essential to the maintenance and continued growth of this industry. Whether we like it or not, the stock market exercises a powerful control over the destiny of this industry. The ease with which issues could be floated during the Dizzy Decade was undoubtedly one of the primary causes of the industry's over expansion. On the New York Stock Exchange alone there are perhaps 200,000,000 oil shares listed. Regarded in proper perspective the market is a sensitive and useful barometer which every oil man should study as frankly and as dispassionately as he does the statistical reports of production and consumption.

Although the world is in the grip of the most intensive wave of nationalism it has ever known the oil industry remains distinctly international in character. In spite of the efforts to curb it oil has flowed with great freedom from nation to nation up to this time. While the United States is no longer master of the world trade in oil it may be accepted that in the last analysis the situation everywhere depends on that in the United States which produced last year 62 percent of the world's total. To put it in another way, as long as overproduction in the United States continues subject to a divided and uncertain control there will be a world oil problem.

This interdependence of world oil markets has long been axiomatic in the trade and it is interesting to note that it is also clearly reflected in the sympathetic movement of oil shares on the various exchanges. Two years ago WORLD PETROLEUM inaugurated the practice of publishing each month the price range of the principal oil shares on the New York and London Stock Exchanges and the Paris Bourse. With this article we present charts illustrating this movement for the past five years.

Blank & Stoller

Unfounded Optimism

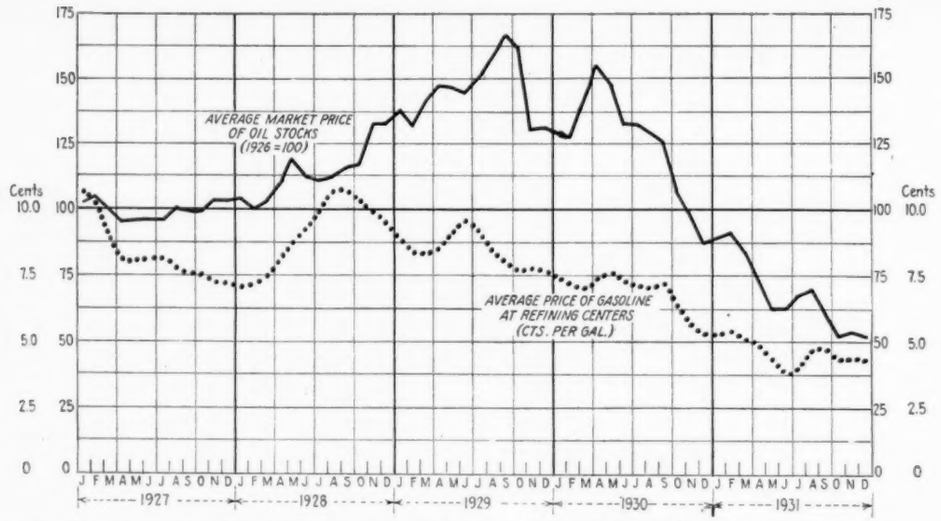
LATELY there has been some disposition on the part of newspapers and financial journals generally to indicate that the oil shares had reached the end of their long downward movement and might be expected shortly to advance in response to favorable developments in the industry. The underlying situation is complex in the extreme and it is only to be expected that the daily press, casting about for something to be optimistic over, should seize upon favorable statistical moves to paint the oil picture in rosier colors. The financial journals owe it to their specialized type of readers to study each department of the investment field with extreme care. The journals of the oil industry have an even more direct responsibility in this matter. As an example of recent comment from such sources we might cite the following from the December 5 issue of the PETROLEUM TIMES (London). "In a few months we feel confident that the oil share prices will stand materially higher than they are today."

It behooves every one connected with this industry to be extremely careful about building up hopes for the immediate future which current position does not fully justify. Generally speaking the oil shares have not been especially popular with the investing public in recent years, particularly since they have come to be sold on the sober basis of income yield rather than speculative possibilities. The public has been disappointed many times in the failure of the oil shares to move upward when predicted. Fresh disappointments will not improve the position, particularly while the industry is in an era where some of its units are compelled to live on invested capital rather than income.

A comparison of the charted quotations reproduced with this article shows that oil shares are now lower than they have been for five years. As a matter of fact first grade oil shares are lower than they have been at any time since systematized records have been kept. The Standard Statistics service figures run no further back than 1918. Since that time the general index of oil shares in New York has never been as low as last month—approximately 48—the closest approach being in 1922 when the index reached 64.6.

Comparison with standard tables for all stocks shows that the oils never advanced to the same extent as industrial shares generally. Due to the absence of a large speculative following they showed better resistance at the time of the October, 1929, break but they have since declined to a point below the market average.

What actually are the prospects for a substantial rise from this level? Any expression of opinion on this point is something to be approached with due humility for the industry has confounded a great many prophets—some of the major ones. For example no forecaster is better known in America than Roger W. Babson. He called the turn on the 1929 market collapse with great exactness. Three months later he praised the oil



NEW YORK STOCK EXCHANGE: movements of oil stock index in relation to gasoline prices.

shares with much enthusiasm and it was shortly after this they began their most serious decline.

It seems to the writer that most of the efforts to estimate the future movement of the oils fail to go deeply enough into the fundamentals. If share prices are to rise from natural causes this improvement will have to depend on a betterment in the underlying business situation and the permanent solution of some rather grave problems which confront the oil industry.

Business Outlook

WHAT is the general business outlook? It must be admitted that it is distinctly unfavorable. There is some possibility of a general business crisis either in February or May, precipitated by European developments. In any circumstance there is no indication of even a gradual improvement before fall. The fact that this is a presidential election year in the United States adds another factor of uncertainity.

There are some historical grounds in America for assuming that this depression may be of at least five years duration reckoned from the fall of 1929. The previous comparable period in the United States, 1873-77, was particularly acute during its latter stages because of resistance to wage deflation. Recovery then was a long drawn out matter. Constructive developments are conspicuously absent at this writing.

If the foregoing is at all correct any marked improvement in the oil shares would be contrary to the general trend and would have to arise from exceptionally favorable circumstances in the business itself.

What are the facts about the industry's present earning capacity? According to a compilation of the Federal Reserve Bank of New York, 24 representative oil companies showed an aggregate deficit of $20,000,000 for the first nine months of 1931 as against earnings for the same period of $112,000,000 in 1930 and $169,000,000 in 1929. Third quarter earnings are considered the best of the year. These were $6,000,000 in 1931; $40,000,000 in 1930 and $75,000,000 in 1929. Co-relating third quarter earnings of 1929 and 1930 with the full years corresponding and applying the same ratio for 1931 after disregarding deficits earlier in the year, would indicate that these companies would earn at the rate of about $13,000,000 a year under present conditions. This is about 12 percent of the 1929-30 rate. It offers little encouragement to the theory of improvement already under way.

It is interesting to note that the behavior of the oil shares on the New York, London and Paris exchanges has been practically the same in spite of the fact that the industry operates under distinctly varying market conditions in each country.

French Opinion

THE French point of view is well worth examining in passing. France exercises a far greater influence on world business today than is generally recognized. The French people have a national instinct for finance and diplomacy. Consequently the fact that they control the world's second largest store of gold enables them to employ it with singular effectiveness and far reaching consequences.

Five leading French oil men have expressed themselves as follows to this journal.

(1) Owing to extremely reduced profits made by most of the oil companies during 1931 and the fact that dividends have often been non-existent, shareholders have been incited to sell their shares in order to re-invest in Government stocks and assure themselves of a fixed rate of income guaranteed by the State. The sale of oil shares has persisted throughout the year because news of the oil industry has always been bad and proration measures seem to have left the situation materially unchanged. Oil shares are cheap in Paris now because the companies which can possibly hope to report profits for 1931 are far from numerous.

(2) Oil shares should have escaped the general decline in prices for although the industry is undergoing a period of transformation, it is still viable. The stock market, however, generally ignores the truth. It is influenced by every rumor, and sometimes the most childish report can send the price of shares flying up or down. It is therefore more owing to the influence of general depression that oil shares are falling in price than to the actual state of the industry.

(3) Overproduction, and the fall in price of crude oil and petroleum products leaves us no hope of realizing any profits this year; on the contrary we are sure of being faced with a deficit. It is therefore natural that oil shares should be less and less in demand and that they should be offered more and more cheaply.

(4) Depreciation of oil shares is only the natural reaction to the present international political situation. The banks are no longer fulfilling their proper role as money lenders. Their one preoccupation is to be able to pay up should clients come to withdraw their deposits. Credit has disappeared, therefore the whole commercial machine is out of working order.

Customs taxes are becoming prohibitive all the world over, all confidence is gradually disappearing as is the desire to make an effort to overcome these difficulties. Just as the man who was sent to the front during the War accepted the danger of being killed, so he accepts today with apparent resignation the uncertainty of what life holds in store for him tomorrow, convinced that we have now reached a stage of commercial war.

(5) The masses of the people have always been guided in their actions by certain inexplicable instincts. Today, having lost confidence, they are withdrawing their money from private enterprises in order to invest it in Government securities. Government stocks, therewill remain worth holding for some little time to come whereas private enterprises will be more and more abandoned.

British Views

THE consensus of British opinion is somewhat brighter in tone. It is based, however, more on an optimistic spirit than upon the immediate situation. The recent election clarified the political air and some benefits in export trade are anticipated from abandonment of the gold standard. Prompt action taken by the new Parliament to cut imports has created a hopeful feeling.

The general business outlook in Great Britain is, however, unsettled, to say the least. Some early improvement is expected but it is recognized that anything like full recovery is dependent on world conditions.

The best British opinion holds that the year's prospects for the oil industry are largely dependent on full proration in America, bringing international rationalization nearer. It is believed that the world depression is delaying the development of the oil using industries with the corresponding prospect of a big oil consumption when development arrears are finally overtaken.

The share market prospects in Capel Court are not considered good owing to the known unprofitable state of the British market and the lack of public interest. At the time this was written the market was discussing the possibility of a rise in British petrol prices following an advance by two new combine concerns but the big companies had not committed themselves.

As pointed out elsewhere in this issue a speedy rise in prices in the British market plus some form of control of imports are the only things which will be generally and permanently beneficial there.

Favorable Factors

THOSE in America and elsewhere who take an optimistic view of the immediate future do so on three main grounds; the continued increase in the consumption of petroleum products in the face of business recession; the fact that proration is operating successfully in the three major producing areas in the United States, and the recent increase in the price of mid-continent crude.

It may develop that the last step was premature and sprang mainly from a desire to do a little window dressing at the year end. Not everyone who took the step felt it was sound but it was hard to revert to the cold inexorable logic of the situation while the people were dancing in the streets of Tulsa.

Oil is actually in a much better position than most of the other commodities which are in superabundant supply. The American consumption has continued to grow while other fuels and raw materials have undergone a great shrinkage in demand. Based on the Bureau of Mines figures for October 1930 to October 1931 the domestic increase in consumption over the previous year was 5.8 percent. If exports are included the rate drops to 1.3 percent.

That this can be counted on to continue is extremely problematical. Estimates of further increase in consumption must be made in the face of the fact that for the first time in 33 years automobile registrations show a decline. According to the magazine MOTOR the number of automobiles in the United States which was 26,523,779 in December 1930 had dropped to 25,951,425 in December 1931, a decrease of 2.5 percent. Automobile manufacturers consider that the saturation point has been reached and plan to build only for replacement.

The oil industry is certainly more fortunate than some other industries since measures for the control of overproduction are in hand. Gratifying progress has been made with curtailment this year considering that the structure had to stand the impact of the East Texas oil flood.

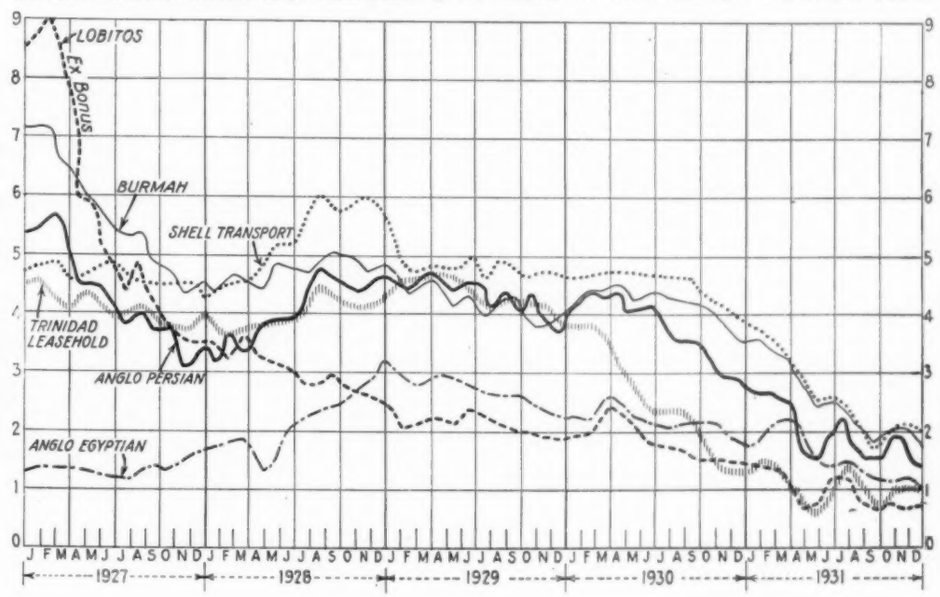
Anyone who is familiar with the difficulties which confronted the movement to restrict production in the United States when it was inaugurated will marvel at the progress which has actually been made. The charges that the industry lacks leadership will have to be withdrawn in the face of what has been accomplished during the past year.

It is some indication of the temper of the business when it is recalled that upon the declaration of Judge Beaty, president of the American Petroleum Institute, on December 15, that crude production from flowing wells was still 20 percent too high and refinery runs were also 20 percent too high, steps were immediately taken to bring about a further drastic curtailment by suspending operations one day a week.

The wisdom of Judge Beaty's frankness has been questioned. To the writer at least we have reached a point where the plain facts of the situation should be boldly dealt with. When strong companies like the Gulf pass their dividends entirely it seems futile to try to reassure the investing public about the critical problems which must be met. The recent action of the Jersey Standard is calling a large part of its bond issue was a wonderful demonstration of strength yet those who follow this company closely must be aware of the fact that the great resourcefulness of the management will be taxed severely in keeping its earnings up to anything like the figures of the last few years in view of the situation which exists in its most profitable markets at this time.

Even granting the progress which has been made the fact remains that stocks of crude oil were 462,000,000 bbl. November 1 as compared with 428,455,000 bbl. two years ago. This is enough to run the industry for about six or seven months. Stocks of gasoline were 36,356,000 bbl. November 1 which is less than the consumption for the preceding month.

LONDON STOCK EXCHANGE: movements of six leading oil stocks during the past five years.



Potential

A SERIOUS statistical factor not generally given due weight is undoubtedly the great potential production from existing wells. California potential is currently estimated at 1,000,000 bbl. per day compared with 500,000 actual. Comparable figures for other American fields are not obtainable in a form which permits of ready coordination but it can be conservatively estimated that national potential is double the actual production today.

Potential figures are notoriously undependable and it should not be assumed that production could be continuously maintained for any length of time at the maximum potential but even after full allowance is made for that factor the pressure on the dam which holds back the oil flood is terrific.

A return to normal earnings is impossible without a material advance in the price of crude. It will be apparent to anyone who thoughtfully studies the facts, that raising the price of crude in the face of this situation is a delicate operation of doubtful permanency which would strain the whole framework of proration and offer a fresh incentive to development work.

The greatest weakness of the whole proration program is that there is no direct control over drilling. It is this which makes it necessary to keep crude prices down at the same time that production is restricted. Given the freedom to drill, higher crude prices will always provide the incentive. In the absence of a drilling tax (and further taxes are certainly to be deplored in this industry) some other form of control will have to be provided. If the whole proration movement can be coordinated by an interstate pact it should include some provision for the issuance of drilling permits only against certificates of necessity from responsible authority.

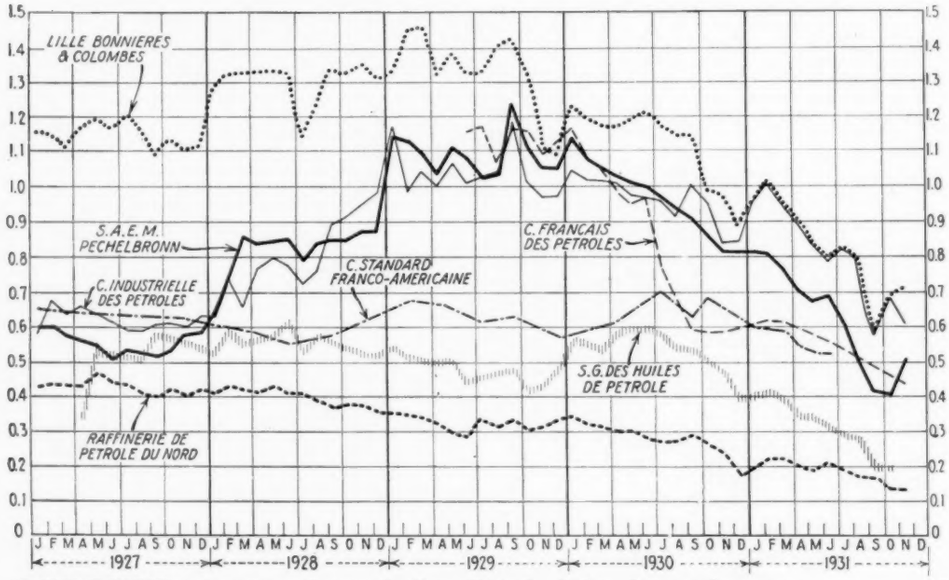
The recovery of statistical balance alone is not enough to bring an immediate return of prosperity. The abnormal pressure of marketing must be reduced to the point where the present abuses will abate.

Marketing Practices

THERE must be sufficient reform of marketing practices to guarantee that such business as is done can be transacted at a modest but consistent profit. The system of discounts which has sapped the earning power of the industry was discussed in WORLD PETROLEUM for November, 1930 under the title "Wasting the Benefits of Conservation." This article is just as applicable today as when published.

Those who believe that the Sherman and Clayton acts are the only bars to sane marketing in the United States are advised to study the present situation in Great Britain where gasoline is sold without profit in spite of the lack of repressive statutes.

Not only do domestic conditions not favor any immediate general improvement in earnings of American oil companies but it can be said with even greater certainty that these will not be supplemented in the future to the extent they have in the past by profits on business done in Europe and South America.


LILLE BONNIERES & COLOMBES
S.A.E.M. PECHELBRONN
C. INDUSTRIELLE DES PETROLES
C. STANDARD FRANCO-AMERICAINE
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S.G. DES HUILES DE PETROLE
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PARIS BOURSE: movements of seven leading oil stocks during the past five years.

Export Profits

DIFFICULTIES in the way of export from the United States are multiplying rapidly. They arise from the departure of many countries from the gold basis, the increasing Russian and Roumanian competition and the general difficulty of adjusting to conditions of growing complexity. It would be a good thing for everybody if all American export selling operations could be concentrated in the hands of a cooperative agency. A gradual retirement from the European field might even be effected for a substantial trade consideration in the Orient or more immediate spheres.

Contrary to most commentators the proposed United States tariff is not a bullish factor. It is unlikely to increase the earnings of any American company if passed. The most that can be said for a tariff is that it would localize the United States oil problem and make it a domestic one. As long as oil flows freely in international trade the oil problem will be a world one, capable of solution only by world treatment.

While the problem remains one of world proportions the American industry must reckon with Russia. Russia has the oil and the reserves. Production offers her no difficulty. She is increasing her output faster than America can curtail. The American oil industry might be well advised to disregard Kipling's advice and make a truce with "the bear who walks like a man."

Before the industry immediately lies the task of finding practical ways to apply unit operation more generally, of increasing the effectiveness of State conservation extending and coordinating it by means of an interstate pact. With this accomplished some way may be found to cooperate by whatever means may seem desirable and attainable with those who aspire to world conservation.

It is doubtful whether the industry elsewhere can be stabilized on a really profitable basis again until the American problem has been solved. With the American situation well in hand there will still remain the problem of Russia to be dealt with before anything like peace and security will return to the world of oil. Russian is in a stragetic position in the market because of her willingness to accept machinery for oil.

Solution by Economy

How are earnings to be made while these complex problems undergo solution? As far as America is concerned only by the most rigid operating economy.

For years this has been a bonanza business. The bonanza profits are gone but the bonanza scale of company living lingers on.

These hard times have already made for sounder operating practices with noticeable savings. One example of this is the reform in the matter of purchases and stores, particularly in producing departments. One result of the pressure for economy has been to give executives a more direct interest in purchases.

There is still a great deal to be done to reduce overhead to a point compatible with present price levels in the industry.

Few companies would fail to benefit by greater compactness in their operations. Unprofitable side lines should be resolutely dropped. Territory which it is uneconomical and unproductive to serve should be abandoned whether at home or abroad. Not gallonage but profits must be the objective. Now is a good time to take these steps. No loss of prestige is involved. Stockholders and the public will sympathize and understand.

Further reductions in salaries and personnel seem unavoidable. Many large companies are heavily over-staffed. Humanitarian considerations are undoubtedly delaying readjustments which time will make imperative.

Without in the least minimizing the steps which have already been taken in the right direction in many individual cases it may be pointed out that executive salaries in general are still too high. They may or may not have been justified by the conditions which existed when business was booming but they will certainly be difficult to defend under present conditions. It is understood that one well known New York company recently cut executive salaries fifty percent. While this is hard on the individual the emergency is unquestioned.

Seen in the light of present day conditions there has been an extravagant locking up of capital in non-producing assets. The vast and luxurious office buildings the oil people have raised in many cities are of doubtful value.

The necessity of housing executive staffs and clerical armies on high priced metropolitan real estate is open to question. Most of these people would live better for less and be more efficient in small towns near operating centers. The millions tied up in these buildings could be used elsewhere to better advantage. They have been defended on the ground that they are good advertisements. Often the only thing they advertised was the fact that the company had money to burn.

Failing radical measures of the sort which have been roughly, very roughly, advocated here some companies must frankly adopt the policy of living on their capital for the present.

The path back to prosperity is not an easy one but it is open to those who will frankly accept the far reaching changes which the world has undergone. It is a wholesome thing to look back today at the humble beginnings of this industry and realize that retracing its steps a little way still leaves a splendid monument to progress unimpaired.

Contrary to belief somewhat generally expressed the oil industry of the United States actually possesses far sighted leadership. Today these leaders are working with more harmony and determination than ever before.

What the industry needs is more vision and better understanding in the ranks. Every sincere effort to improve the American situation, which is the key to the world problem, has to run the gauntlet of bitter and uninformed criticism. The defeatists in the industry are those who want to have the Elysian combination of overproduction and high prices and make both last forever in defiance of fundamental economic law.

This industry has plenty of leaders. What it badly wants is well informed and patient followers.

Given these things and the courage to face the facts frankly the industry has the capacity to rise above any situation in which these trying years may place it.

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Oil Shares and Short Selling

The insignificant part short sales have played in depressing the market for oil stocks was disclosed by the recently issued report of the New York Stock Exchange.

Details of the short interest were reported on six selected dates from May 35 to November 30. The first day, May 25, marked the beginning of the Exchange's inquiry into short selling. The second date June 26 was selected because it showed the short position at approximately the peak of the June advance in the market. September 11 was midway between the June high level and the November high point. October 5 was the date on which the market broke through the June lows. November 9 saw the climax of the autumn rally. November 30 was the date of the final report.

This compilation appears to indicate that the market feels that the oil shares have fully discounted unfavorable influences. The absence of any extensive short interest is not wholly favorable however since there is nothing much beyond ordinary buying to absorb any further liquidation which remains.

Total Shares Listed as of Nov. 30, 1931.		May 25.	June 26.	Sept. 11.	Oct. 5.	Nov. 9.	Nov. 30.
2,696,650	Atlantic Refining Co.	5400	2285	2400	500	585	419
2,257,720	Barnsdall, Class 'A'	900	2086	1200	...	1280	320
4,721,524	Cont'l. Oil of Delaware	6000	5555	6300	6100	6155	4820
96,116	Houston Oil	8200	4910	3700	2800	4260	3905
677,018	Houston Oil, new	16000	8000	300	...	205	...
1,857,912	Mid-Continent Pet.	400	1410	1600	900	730	100
6,548,052	Ohio Oil	4100	2043	2600	...	475	664
4,420,102	Phillips Petroleum	8400	5441	1700	600	1263	2178
2,500,000	Pierce Petroleum	...	600	...	5300	...	...
2,441,432	Prairie Oil & Gas	3000	217	1200	1400	1825	1200
4,050,000	Prairie Pipe Line	1500	...	9800	100	230	100
3,038,370	Pure Oil	1800	1806	600	900	655	246
2,126,250	Richfield Oil	2500	1290	800	1200	800	1500
1,235,815	Rio Grande Oil	1100	800	700	200	380	764
1,244,383	Seaboard Oil (Del.)	7200	7425	1900	500	853	885
13,070,625	Shell Union Oil	4900	3929	6600	300	2130	585
400,000	Shell Union Oil pref.	...	15	1400	500	100	125
869,271	Simms Petroleum	...	500	...	...	260	250
6,103,371	Sinclair Consolidated Oil	40000	51360	62800	36700	44950	41603
1,000,000	Skelly Oil	3500	1950	1600	400	300	307
31,677,768	Socony-Vacuum	...	...	10700	3700	3025	3272
13,102,900	Standard Oil of California	...	4770	9900	3600	5161	9467
25,677,466	Standard Oil of New Jersey	37600	27677	20200	26600	31442	24322
1,544,359	Sun Oil	900	250	...	5600	165	140
9,851,211	Texas Corp.	49300	28307	15800	6200	8071	7428
5,998,086	Tide Water Associated Oil	1000	1835	700	300	...	100
2,225,302	Union Oil of California	12400	1893	1400	1900	699	809

Critical Condition In British Oil Industry

Losses on Sales at Rate of £12,500,000 a Year Produce Serious Situation. Important Interests Seek Government Aid in Control of Petroleum Imports.

LONDON.

ONE reason for the disorganized state of the British petroleum trade is the fact that Great Britain is technically an open market. Any man or firm with the necessary money or credit can import a cargo or part of a cargo at any time and establish himself as a distributor of petrol at relatively small cost. There is plenty of public storage available; rail and motor tank cars can be hired, and there always are casual commercial buyers and even filling station proprietors willing to buy up anything cheap. The only means thus far evolved for checking the activities of the independents, or so-called "pirates," is by maintaining a selling price entailing loss. This has been done for so long and to such a degree that more than one of the big companies are very tired of losing money. Certain powerful interests among them are making strong efforts to get from the British Government the cooperation needed for the control of imports.

A brief survey of the petrol market during the past three years will give some understanding of the difficulties that have arisen and the efforts that have been made to solve the main problem. Following heavy losses during 1928 a distributors' organization was formed on the suggestion of David Filitz. The first signatories to the agreement then made were the so-called "Big Three"—the Anglo-American (Standard of New Jersey) the Royal Dutch-Shell and the Anglo-Persian—and four independents. The two companies importing and refining Russian oil, the Russian Oil Products and the Power Company (Medway Oil and Storage Company, Ltd.), became parties to the agreement in January, 1929. Prices were fixed at a remunerative figure and imports limited and all went well for some months. But the chance of making a profit brought certain newcomers into the field and enabled others, not signatory, to expand their business. Accordingly, prices were again reduced to an unprofitable level, the resulting loss being so heavy that the Sinclair Company withdrew from the Distributors' Association.

The other members of the body pressed the Big Three to raise prices and it was generally understood that this would be done by last September. Meanwhile, however, the United Oil Importers, of which company Mr. Filitz, just mentioned, was the managing director, got into difficulties. Until a short time previous, this concern bought largely from the New Orleans Refining Company or some other subsidiary of the Dutch-Shell, paying for its consignments by 50 percent cash and 50 percent on six months bills. Early this year the United left its former supplier and took a cargo valued at about £35,000, all on credit, from the Atlantic Refining Company.

About the time when the rise in prices was expected to occur, one of the bills held by the Shell group against the United, fell due. Owing to commitments entered into on the Continent, the United was compelled to ask for a renewal of this bill, a fact which showed the Shell that the low price campaign had proved successful against two of its competitors, Sinclair and United Oil Importers. A few months later Cities Service practically retired, raising its price to a figure which precluded doing anything like its agreed quota of trade.

This left, of the original independent signatories, only the Sealand Oil Company, together with the two later adherents, the Russian Oil distributing organization and Medway. It is quite possib.e that the Big Three felt that a policy which had killed off three of their friends might, if continued, strangle their enemies. In any event, the expected advance in price has failed to materialize and the United Oil Importers, left to itself, has gone bankrupt, still owing the Atlantic Refining Company for its £35,000 cargo, though it managed by sale of the Atlantic's oil and other assets, to pay off both a heavy bank overdraft and the Shell.

But the position was, and remains, desperate for prices have not yet been raised, regardless of the fact that the abandonment of the gold standard seriously affects the netback f.o.b. Gulf of all imports purchased at dollar prices. The tax on petrol was advanced to eightpence (16 cents at par) per British gallon; the pound was devalued, but nothing like the full increase has been passed on. Petrol has been sold to commercial users for a fraction over tenpence per gallon; garages get No. 3 from the Big Three at 1/0-1/2d and No. 1 at 1/2-1/2d. They get the same grades at one penny less, and sometimes at a bigger reduction, from the pirates. Distribution costs vary from just under twopence per gallon to over threepence and can be averaged at 2-1/2d. Tax is always eightpence, even on adulterants added to the cheaper brands. Evasion of the tax in the manner set forth in the October issue of WORLD PETROLEUM is no longer possible in Great Britain.

Over 60 percent of the British trade is with commercial users. Quotations issued in England for No. 3 are 5-3/4 cents per American gallon f.o.b. Gulf. This is equivalent, at $3.40 to the pound sterling, to at least 4-2/3d per British gallon at Gulf and 5-1/6d per gallon delivered in tank in British markets. The actual cost of Gulf petrol with tax, therefore, is not less than 1/ 1-1/6d per gallon, to which must be added 2-1/2d per gallon for the average cost of pumping out, delivery, etc., making the total value of petrol, tax and services rendered 1/ 3-2/3d per gallon. And the very highest price realized, and that on but a small proportion of the trade, is 1/0-1/2d. It probably would be understating the present position, therefore, to say that the average loss on petrol sold in Britain is now over threepence per gallon, or, on 1,000,000,000 gallons per annum. £12,500,000 a year. This is commercial madness and the Big Three know it. Such prices have driven out of business the little people, who used to buy ex-tank, and also those who brought over stray cargoes to supply such buyers. But they, and others like them, are only awaiting the return of an economic price, while the Roumanians are carrying on the same as before, and the Russians almost so. And the Cleveland

Company, subsidiary of the Petroleum Storage and Finance Corporation, Ltd. (Standard of Indiana), is even expanding.

In the circumstances, it is not surprising to find that two of the Big Three are trying to reduce costs, so that their loss per gallon will be less than that of their competitors. That, undoubtedly, is one reason for the combination between the Anglo-Persian and the Dutch-Shell in the British market. It is possible that the Dutch-Shell can see advantages in pinning its tank cars to the star of the Anglo-Persian on account of its close identification with the British Government; but it is not possible to see what advantage, other than the use of the Dutch-Shell superior technical knowledge and more extensive marketing experience, can accrue to the Anglo-Persian. The Anglo-American, it is reported, was not invited to join the new combination, and is said to have perfected its plans independently. Recently, however, possibly in view of certain objections raised to the new combine, this subsidiary of the Standard of New Jersey is said to have been offered an opportunity of participation and there is authority for saying that its officers have been permitted a private view of the agreement between the other two companies. What attitude it will assume remains to be seen.

Obviously, not even a possible saving of one halfpenny per gallon in distribution costs can turn the loss of the Big Two into a profit. In some quarters it is considered that only legislation controlling importation can do this and the difficulties in the way are enormous. Let us consider the position and its possibilities.

The volume of trade now held by the independents is at least 25 percent. Of the balance, amounting to 750,000,000 gallons of petrol, annually, the Dutch-Shell handles something over 38 percent, the Anglo-American just over 36 percent and the Anglo-Persian about 25 percent. Is the British Government to legislate on the basis of 75 percent to the Big Three or to give them the field as being the only simon-pure "British" companies? The other companies chiefly concerned are the Petroleum Storage and Finance; the two importers of Russian oil, one of which is controlled by the Shell, Anglo-Persian and Anglo-American together; Cory Bros.; the Sealand (a signatory with the Big Three with a yearly quota of nearly 70,000 tons); The Texas Corporation and, in a lesser degree, the Roumanian interests.

When the question of negotiation with the British Government arises the Petroleum Storage and Finance can honestly and truthfully say that it is an entirely British company, under British control and liable for British income tax, even thought half its shares are owned by the Standard of Indiana, through its asphalt marketing subsidiary here, the Ebano Oil Company. Sir Clifford Cory, the head of Cory Bros., a very wealthy man who has spent a fortune in establishing his refineries and distribution here, is entirely British, a dour fighter who was for many years a Member of Parliament and has an excellent first hand knowledge of everything pertaining to new legislation. He cannot be overlooked. Forty percent of the Sealand Oil Company's capital of £100,000 is held by the Continental Oil of Delaware and a similar amount by nominees of J. P. Morgan and Company. An associate of the Sealand (one of the founders) is Chas. Vincent Sale, a director of the MORNING POST, the chief Conservative daily, while E. C. Grenfell, a partner of J. P. Morgan and Company's London house, is senior Member of Parliament for the City of London itself. Presumably they too, will have something to say if it is proposed to leave them out of any new arrangement. The British Government has extended such liberal credits to the Soviets in other matters that it would be dangerous to ignore the Russians, no matter how desirable such a course might be.

Practically 100 percent of the ordinary shares of the Anglo-American Oil Company are now owned by the Standard Oil Export Corporation so that, if desired, bookkeeping methods might avoid the liability for British income tax on British trade. This is a factor which may militate against a full allocation to the Anglo-American in any development, althought those responsible for the conduct of this company in all probability will give the Government the necessary assurances on this matter. A further consideration for the authorities is the fact that the shares of the parent of both concerns, the Jersey Standard, are a very popular holding among some of the most important British financial institutions, such as the big insurance companies. It is unlikely that the Anglo-American will or can be put off the British map.

An important factor in the situation will be the position taken by the Government. It very possibly may feel that to give certain oil companies, whether by restriction of import licenses or by the levying of import duties on unfavored importers, a monopoly of the British trade and the chance to recoup themselves for disastrous losses already incurred, while profitable for the companies, may entail loss to the Government and the country.

At the present time, many owners of commercial vehicles can only keep going profitably because of the low prices of petrol. Many owners of private cars would curtail their mileage if prices rose. It is conceivable that a rise of more than sixpence per gallon on the present price would entail a reduction on yearly sales of 20 percent, or 200,000,000 gallons. This would mean, with the excise tax at its present figure, a decline in Government revenue of over £6,500,000 per year from this source. Against that, assuming export prices abroad remained at the present Gulf figures and were so booked to importers, the average of profit, with an advance of sixpence in price, might be about threepence per gallon, but, possibly, only on 800,000,000 gallons. So that the amount liable for profits taxation would produce, at 5/- in the £ about £2,500,000, with, perhaps, another million from dividends on the Government's Anglo-Persian holding.

Unless international conditions improve, the Dutch-Shell, which, according to its own statement, sells only six percent of its products in English markets, would have to set off its profit on this business against losses elsewhere, reducing the income tax revenue payable by another £750,000. Such a reduction in trade would cost the Government, on this basis, over £3,000,000 per annum in revenue.

This is an aspect of the problem which may weigh seriously with the authorities, anxious as they may be to help the industry. It can be stated that the loss sustained in income tax by the passing of the interim dividends of the Dutch-Shell and the passing of the interim of the Anglo-Persian and the loss on holdings in the latter, totalling, as they did, about £1,600,000, brought home strongly to the Treasury the stupidity and danger of selling essential commodities below cost, with the inevitable result of taking dividend monies from a world already too restricted in spending power. Anything that may fairly be done to remedy this position probably will be done, but there must be some measure of reciprocity on the part of the companies. If it is possible to fix bases of prices and profits and to define a scheme under which profits earned in Great Britain are determined on an agreed basic import price and are made liable for taxation as profit earned

(Continued on page 20)

Deep Well Drilling 2000 Years Ago

Striking Similarity Between Ancient Chinese and Modern Drilling Technique. Many Tools Antedate Those in Use Today.

By Thomas T. Read.

Vinton Professor of Mining, Columbia University, New York.

DEEP well drilling has been an art in China since 221 B.C. and oil was often encountered in operations designed to produce brine. Wells in China eventually reached a depth of 3500 ft.. Not only drilling technique but the tools used bore a close resemblance to modern practice, and foreshadowed many of the features incorporated in present-day patented designs. The author of this interesting article is a former professor of Pei-Yang University, Tientsin, China, and an authority on the subject with which he deals.

CHINA, as everyone knows, is a large consumer of petroleum but a negligible producer of it, so that it is indebted to the outside world for its supply of petroleum products. In 1913 an agreement was made between the Republic of China and the Standard Oil Company of New York whereby the latter was to explore and develop the petroleum resources of the provinces of Chih-li, Shansi, Shensi, Kansu and Ssuchuan. The results of the geological exploration were not sufficiently encouraging to lead to actual exploratory drilling anywhere except in one district in Shansi province. Even there the drilling was discouraging and the New York Standard finally ceased its operations. No one can say with certainty that China will never become an important producer of petroleum, but at present it is not, although two small wells in the Yen-chang district, Shansi, are reported to yield about 350 bbl. crude daily. With productive facilities throughout the world already so large in proportion to the world's present requirements, no commercial organization has the incentive to spend money in bringing in new fields.

China has a real debt to the outside world, and especially to the United States for petroleum, since its products have greatly increased the productive capacity of her population. Less than fifty years ago foreigners resident in the interior of China found that even relatively large cities would have no other means of lighting than open lamps similar to those portrayed in Egyptian inscriptions of centuries ago. They not only provided feeble illumination, but they burned vegetable oils that were produced only at the cost of considerable human effort on land that was needed for the production of food in a country which has aptly been termed a "land of famine." Someone has estimated that in North America the substitution of petroleum-product driven agricultural machinery for farm animals as sources of power has released 26,000,000 acres of agricultural land formerly devoted to growing food for the animals. I know of no estimate of the amount of agricultural land released for food production in China by the substitution of kerosene for vegetable oils as illuminants, but it must be an important amount.

That is not all the story, however, for the light given by a kerosene lamp is so much more effective than that of the primitive lamps referred to, that the people of China are enabled to work much more effectively than they previously could. On both scores the use of petroleum products has been a great boon to them.

The debt is not a wholly one-sided one for the petroleum industry in turn owes something to China. Oil wells are now being drilled to depths up to 10,000 ft. and over, and it seems certain that though additional new fields of relatively shallow depths, such as that in East

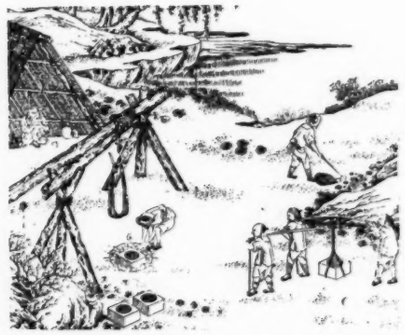
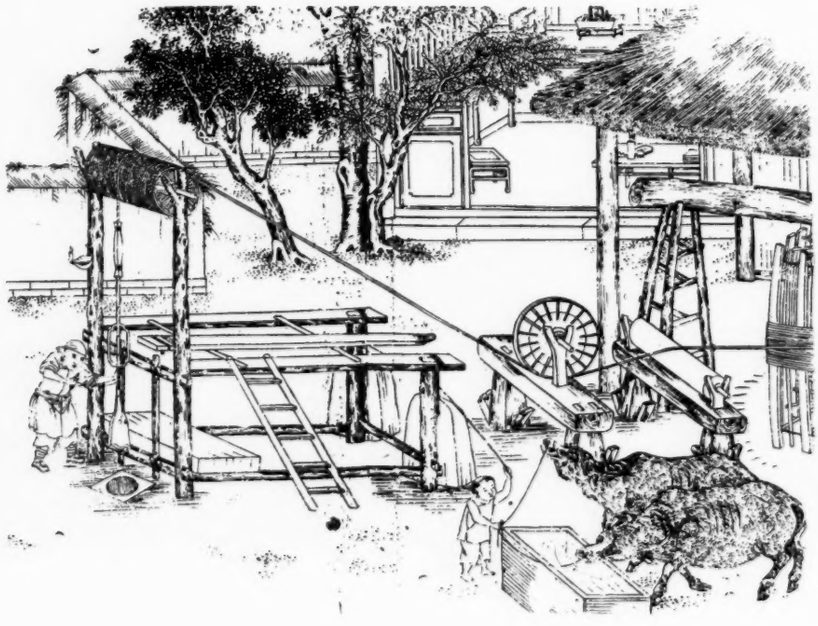


Fig. 2. Lining the top of well after spudding in.

Fig. 1. Commencing drilling. Note resemblance of this ancient Chinese fishtail bit to modern tools.



the Tze-liu-ching district of Ssu-chuan, which was published in the *Annales des Mines* for 1891, 40 years ago.

In starting a well a small shaft is sunk through the surface material to firm rock (usually less than 100 ft.) and is then lined with perforated blocks of stone, as shown in Fig. 2. Fig. 1 shows the start of drilling operations. The cable reel, which has a vertical axis instead of a horizontal one, can be seen at the right of the figure, while the animals that furnish the motive power for operating it when reeling in appear in the foreground. The driller is guiding the cutting bit into the hole.

Regular drilling operations are shown in Fig. 3. The string of tools is suspended in the hole from one end of a lever, everything being adjusted so the lever is horizontal when the bit is touching the bottom of the hole. The men seen at the right then jump from the platform upon the lever depressing it and raising the bit a couple of feet. Then they jump to the platform on the other side and the bit falls in the ordinary way. The driller has meanwhile given the cable a quarter turn. With two men on each side, jumping back and forth, drilling proceeds at the rate of 12 or 15 strokes per minutes. When the hole gets deep the number of men is increased up to 10 per shift. There are always two shifts, one set working for 10 minutes while the others rest, alternately. These human power plants were being paid, in 1890, at the rate of about five cents each per day, in addition to their food and lodging.

The strings of tools shown in Fig. 5 and 5A are interesting. The one at the right is used for deep drilling. The bit weighs 200 to 300 lb. and is suspended by jars from the sinker bar (marked S) which weighs 130 to 165 lb. The sinker bar strikes the top of the bit at each stroke, giving a double impact, and the little clapper, K, makes a sound which can be heard at the top of the well. By keeping things so this can just be heard the full weight of drop is obtained and the cable kept taut so it will not lash the sides of the hole. The cord marked *i* in the figure at the left is to prevent losing the drill-bit in case the jars break.

The cable used is a hemp rope, and naturally it sometimes breaks. Then the fishing tools shown in Fig. 4 are brought into use; the various purposes they serve will be self-evident to experienced cable-tool drillers; Coldre explains the use of each in some detail. The sketch marked Fig. 34 in the plate shows a gas burner made from a perforated stone, that is used in evaporating the brine from these wells.

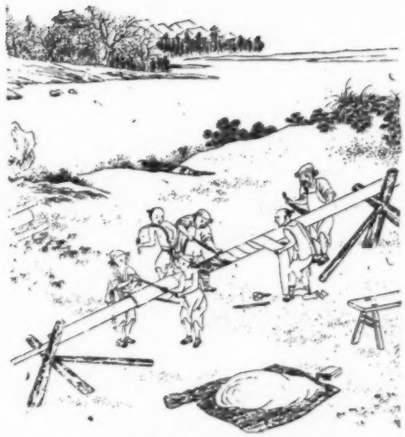


Fig. 6. Making bamboo casing.

If a flow of water is encountered above the level aimed for it must be cased off. Fig. 6 shows the casing being constructed out of wrapped bamboo, and Fig. 7 shows the placing of it in the hole. The joints are made water-tight with a cement compounded from tung oil and chalk.

In this way wells 3,500 ft. deep are drilled, most of them in the district average 2,500 to 2,800 ft. deep. Drilling operations extend over several years and are commonly financed by a sort of joint-stock company. The wells thus drilled, which extend down to Cambrian strata, yield a strong brine that is evaporated with the aid of the gas which the wells also yield. Thirty or forty of the wells in the district yield minor amounts of crude petroleum. The natives do not refine it, but burn it in lamps or use it as medicine in much the same way as it was once used in this country.

How long ago this technique of deep well drilling was worked out nobody knows. Yuan's "Classics of Water" says that the drilling of salt wells in China began in the Chin dynasty, 221 to 206 B.C. The official records of the Tan dynasty, 618 to 907 A.D. state that 640 salt wells were drilled in that period. It is said of one of these wells that it was 250 ft. deep, but there seems to be no record of the depth of other early wells. There are abundant references to later wells.

If we may judge from what we know of other practical arts in China we may assume that Marco Polo, if he did observe drilling operations, saw them being carried on in much the same way they were 700 years later, when Coldre described them. The attentive reader will have observed that while the operations described differ in some details from cable-tool drilling as practiced in this country, the main engineering features are identical. If Europe did not learn the art of deep well drilling from China, but developed it independently, it at least developed it in an identical way, except for such differences as the means and materials available would impose. But it seems quite probable that enough knowledge of Chinese methods was available in Europe to guide practice, and the petroleum industry may therefore yield to China, and its unknown engineers of the misty past, the credit for developing the art of making deep holes in the earth that is the first essential of obtaining petroleum in commercial amount.

5. Shal- well ing tool.

Fig. 7. Setting casing in a well. Note the lap joint, which can also be seen on the section being carried by the coolies.

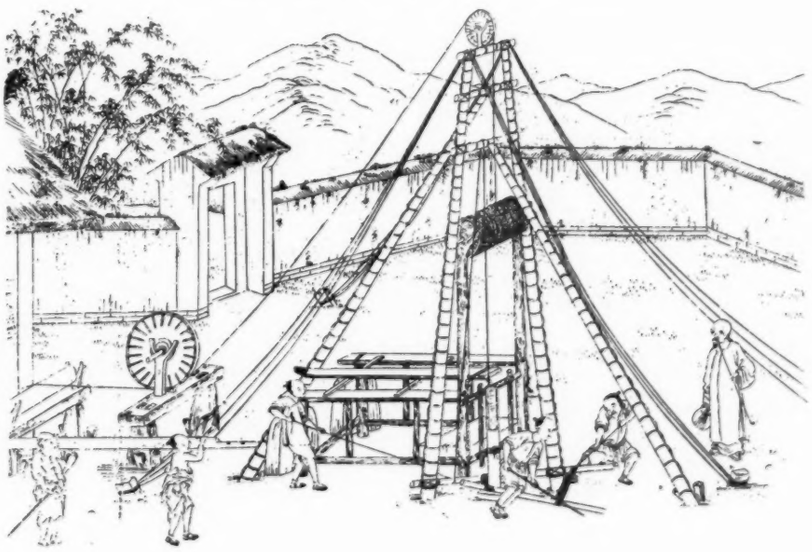


Fig. 5A. Deep well drilling bit.

Texas, may from time to time be discovered, our reliance for future supplies of crude must increasingly be on pools of greater depth. Modern technique of drilling wells to great depths has been perfected in America and probably many people suppose it had its origin there. As a matter of fact the emerging petroleum industry simply applied to its own use the technology of drilling brine wells, and the first petroleum well drilled in Pennsylvania was put down by an experienced salt-well driller, using his regular methods and equipment.

The drilling of wells, for either salt or fresh water, had been developed in Europe before it was applied in America. In 1858 one of the instructors at the School of Mines at Pribram, Austria, produced a 400-page illustrated book on the art of drilling wells, citing over 200 references in previous literature. There is little doubt in my mind that the drilling of deep wells was an art that European practitioners learned from China. There are no early European references to deep drilled wells, but we find them in Chinese literature. As is well known, there was a good deal of contact between China and Europe from the 12th Century on. There is no positive proof that returned travelers practiced in Europe arts they learned in China, not even in the case of zinc smelting, but the presumption is strong. Marco Polo visited in 1220 A.D. the part of China referred to in this article, and mentions the making of salt by evaporating brine, but says nothing about drilling operations. He said that he did not describe many things he saw, because people would think he was a liar, so it is possible that he thought it wisest to say nothing of drilling deep wells.

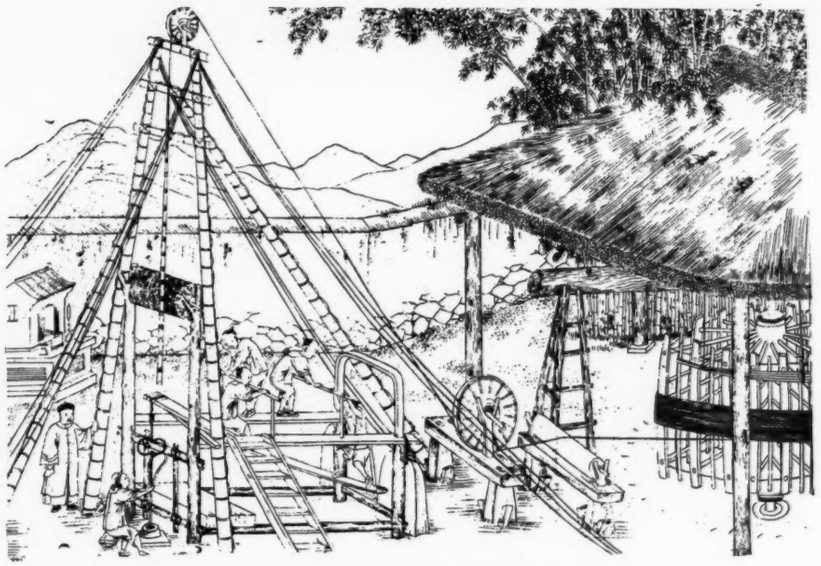


Fig. 3. Regular cable drilling operation by man power.

How the Chinese drilled wells as deep as 3,500 ft. is clearly shown by the accompanying illustrations. The originals were made by an unknown Chinese artist and their date is also unknown to me. They were taken from the official register of the salt wells of Ssu-chuan province by Louis Coldre and reproduced in his description of the salt and gas wells of

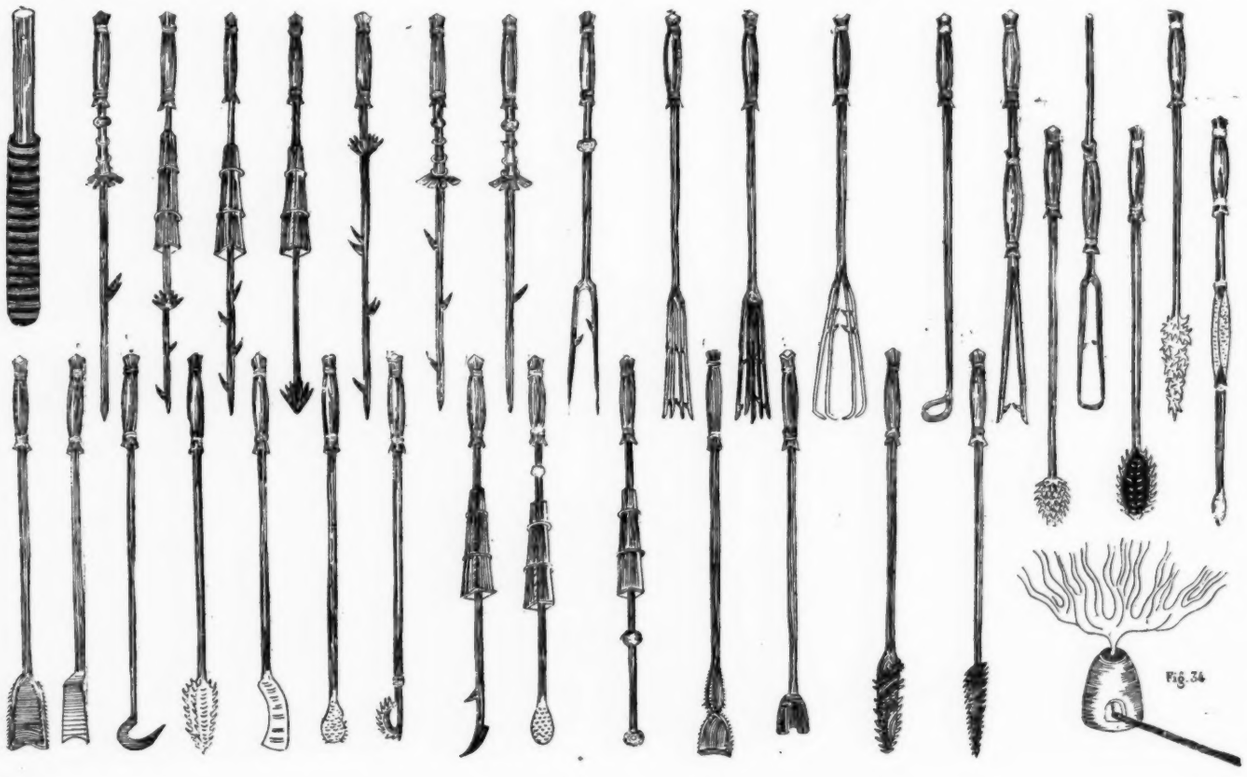


Fig. 4. Of particular interest are the numerous fishing tools developed by the Chinese hundreds of years before Drake drilled his historic well. Note also the simple gas burner.

View to the north of the Neviano del Rossi oilfield.

Italy's Petroleum Production Increasing

Crude Output by Three Major Producing Companies Exceeded 150,000 Bbl. in 1931. High Quality of Oil and Heavy Import Duty Enables Small Wells to Flow at Profit.

CONSIDERABLE prominence was given early last year in the daily press of the world to the so termed Fontevivo gusher near Parma in Italy, which was reported as flowing at the rate of four barrels per minute of high grade oil. As is sometimes the case, the announcement was a distortion of the facts. Actually this well, which had been drilled to a depth of 643 ft. in the fall of 1929, flowed wild for some time, covering a large area with mud and sand, and was shut in for over a year.

When new drilling appropriations were made available by the Italian Government, the engineer of the Azienda Generale Italiana Petroli, in which company the Italian Government is interested, decided to make further explorations with a view to obtaining gas for the local market. The well was opened and practically pure gasoline was blown through the orifice, which evidently was an accumulation of liquified gas. After flowing for a few minutes it was again shut in. Later when storage tanks were available it was allowed to flow for nearly three months; but salt water increased rapidly to a point where its daily production increased to fifteen tankcars of salt water and 44 bbl. of light crude oil. Hence, of the total output only two percent was oil. Other drillings in this structure have all resulted in producing salt water wells with varying quantities of gas.

Wells of Societa Petrolifera Italiana at Montechino.

It is not widely known that there are hundreds of oil wells in Italy, the flow of which ranges from a few quarts to 30 bbl. per day each. Due to a customs duty of $2.11 per cwt. ($6.64 per bbl.) on imported crude, and to the high quality of the native supply, oil production in Italy is carried on at a small profit. In the Emilia district specific gravity varies from 0.750 deg. Beaume at the Montechino field to 0.800 deg. at Tabiano, and the crude has a gasoline and kerosene content of approximately 75 percent. It is a naturally filtered petroleum that has migrated into its present sandy beds in the Lower Miocene or Eocene strata.

The A.G.I.P. recently drilled five wells close to the boundary of the Regio Terme, or State Bathing Company, of Salsomaggiore. This concession is leased to the Societa Petrolifera Italiana. One of these wells has an output of 38 bbl. per day including ten percent salt water; Hence the total production from this field is about 120 bbl. daily, or not over 44,000 bbl. yearly.

The Societa Petrolifera Italiana, capitalized at 25,500,000 lire, is in part controlled by an important American oil company, and is actively operating in two of its fields, namely, Tabiano, about one-and-a-half miles from Salsomaggiore, and Neviano-Valezza. Both of these fields have been extended during the past year, particularly Valezza which has spread far to the southwest. The company owns, however, six concessions (2,858 hectares) of prospective oil lands in Amelia on the northeast slope of the

Canadian type rig, near Nicosia, Italy.

Appenines, and also has three licenses to explore on 7420 hectares in the provinces of Modena and Parma but is more active in its holdings at Valezza and Tabiano, having nearly a hundred wells at the former alone. The oil horizons occur at 330, 660, 990, 1800 and 2650 ft. In 1929 the company drilled about 22,000 ft. all told. In 1931 the company's production very considerably increased, being about 90,000 bbl. compared with 11,606 bbl. in 1929, and 8127 bbl. in 1928.

Since last May several wells at Valezza, drilled to a depth of 1650 ft., have been flowing steadily at the rate of 25 bbl. a day. At Tabiano, five wells, brought in at 650 ft., have a settled production of 20 to 30 bbl. each. Last year the first six months output was doubled in the following quarter, with the result that the total for the year was, as just stated, about 90,000 bbl. The Societa Petrolifera Italiana has a small refinery at Parma for handling the local demand.

There is one other producing company of importance in Italy, namely, the Petroli d'Italia, controlled by the Banca Commerciale. This concern operates the old oil fields south of Piacenza at Velleia and Montechino; but its production has fallen off lately, and now is no greater than 100 bbl. daily.

Including other small wells the total crude production in Italy in 1931 was about 155,000 bbl., which, being a great increase over previous years, offers encouragement for the future. Indications are that further development work will result in commercial production, particularly in the flats between the river Po and the existing oil fields, where there is a possibility of oil being found in larger quantities if deeper drilling is carried out. But it is doubtful if the country will ever rank among important producers. Italy annually imports about 3,500,000 bbl. of gasoline; 550,000 bbl. of lubricating oil; 1,086,708 bbl. fuel and Diesel oil; and about 450,000 bbl. crude oil as well as other petroleum products.

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Geophysical Studies In Italy

By Professor Arnado Belluigi

Geophysicist, A. G. I. P.

In recent years extensive geological studies have been made in Italy by such experienced geologists as Bonarelli and Anelli. These experts carried out investigations for the Azienda Generale Italiana Petroli (A.G.I.P.), the results of which have not been published—except in part. Scientific prospecting for petroleum was commenced in Italy when the geophysical department of the A.G.I.P. was formed, and work has been carried on continuously from 1927 to the present time with the backing of the Fascist Government, which is represented on the board of the company.

From analogy with other petroliferous regions Signor Porro, who also has made studies, indicates that the zone flanking the Appenines on the side toward the Adriatic is worth serious investigation, and it may be said that practically all studies have been concentrated in this region. It is thought that beneath the covering of recent deposits there must exist Pliocene clays folded into anticlines and below these, and in marked unconformity therewith, the porous Messina horizon.

Researches that have already led to tangible results have been essentially geophysical, which are especially adapted to investigations in flat regions. At the end of 1927 investigations on gravimetric relief with the Eotvos balance were initiated in the region of San Colombano on the Lambro; here there is a hill that was formerly regarded as a regular anticline emerging from the plain and coinciding with the Porro concession. In this locality there also exist noteworthy indications of petroleum and of mineralized water.

The problem later proved to be much more complex than first had been supposed, and Porro and Anelli were able to show that the supposed regular anticline of San Colombano was merely a thin, inclined crust of marine sediments lying unconformably upon the highly

Caterpillar tractor hauling casing at Neviano-Valezza field.

Oil field east of Valezza. Nineteen wells can be seen in this illustration.

folded Miocene formations below it.

Gravimetric relief later showed the existence of a deep gravimetric anticline with a gravimetric axis running from east to west immediately north of the northern edge of the hill of San Colombano. This phenomenon is thus difficult to reconcile with the theory of a dome; but a sufficient number of drillings would settle the question.

It cannot be said that a substantial program of drilling has been put on at San Colombano on the Lambro in the province of Milan, and although a few tentative holes have been bored to a shallow depth these have not given any practical results. Neither can it be said that the question of the existence, or non-existence of petroleum in commercial quantities in the region of San Colombano has yet been proven.

What has been said for this locality applies to all other regions that have been studied and which, for one reason or another, have been thought to be petroliferous. There is still good reason to continue geological and geophysical studies in advance of costly drilling operations.

No geological reports exist from which it would be possible to construct a map of the subsoil of the Paduan plain; the principal studies of this region remain in the possession of the A.G.I.P., whose geophysical department has financed the researches.

Besides the work done at San Colombano, geophysical studies have disclosed what may be called the Emilian sub-Paduan dislocation, which may be divided into three areas of upheaval (the so-called normal gravimetric anticlines): Fontevivo, Montepelato, and Cavriago, the major axes of which are developed parallel to the median axis of the Appenines and about 50 kilometers distant therefrom.

Some time ago the geologist, Anelli, reported that indications of petroleum in the Emilian Appenines occur in association with intrusions of clay shales, "agrille scagliose," apparently of a dispitritic type, which cut across more recent sedimentary formations. From the fact that at Montepelato (in the Parmean plateau, about 10 kilometers from the zone of foot hills), below Quaternary formations, in the sands of the upper Pliocene, there occur extensive basins of bromide waters (similar to those of Salsomaggiore) accompanied by gaseous hydrocarbons, Anelli infers that a fold of the "argille scagliose" has probably been injected through recent formations and may have reached the Pliocene sands. The ordinary geological methods have not been sufficient to locate or to verify the existence of this type of dislocation, but gravimetric, magnetic or electrical studies may contribute effectively to verification of the existence of this intrusion of "argille scagliose." Its delimitation and its morphological characteristics may then be controlled by borings.

Geophysicists have further found that the gravimetric disturbance at Montepelato forms part, as has been stated, of an ensemble of similar disturbances distributed in a southeast—northwest line parallel to the margin of the Appenines. The most easterly of these perturbations showing an excess of gravity is found in the neighborhood of Cavriago (Reggio Emilia); from there it continues to Malandiano, Montepelato, and, coinciding with the valley of the Taro, appears evident in a zone which extends from Collecchio to Fontevivo.

Magnetic characteristics have been noted at the apex of the gravimetric perturbations, and electrical investigations by new and accurately worked out methods have given especially useful indications. Geophysical investigation of this buried Emilian dislocation has already shown the possibility of discovering petroleum at Fontevivo.

[The term "argille scagliose" referred to in this article, applies to a formation consisting of plastic green and reddish clays, which have been forced upward during the mountain building of the Appenines, and now occupies extensive areas. Large and small blocks of hard sandstone and limestone fragments are floating in this soft clay complex and represent broken hard strata. The age of the formation is commonly given as Eocene, but may be in part Cretaceous. There are also many areas where well stratified Eocene and Cretaceous strata occur so that these disrupted zones must be classed apart.—EDITOR]

Looking towards southwest over the Tabiano-Salsomaggiore oil field. An extension has been made on the hill on the right.

World Conference Plan Up To A. P. I.

Roumanians Have Requested the American Petroleum Institute to Indicate Upon What Basis It Is Willing to Meet to Discuss the Matter. Next Move Rests With the A. P. I.

WHETHER or not there will be an international conference in the near future to explore the possibilities of stabilizing the world oil industry appears at the present writing to depend upon the American Petroleum Institute. Those who have been following the subject will recall that in November the Roumanian Petroleum Industrialists suggested that such a conference be held with the Kessler plan as a basis. The directors of the A. P. I. replied that under the law of the United States it would be impossible legally to use any definitive agreement to curtail production as a basis for such a discussion but expressed a willingness to call such a conference for the purpose of exchanging views on the question of supply and demand leaving each national group free to work out whatever measure would be practical under the laws of its own country.

Our latest information is that the Roumanian Petroleum Industrialists replied under date of December 24th as follows:

> Having received your cablegram 12th November—Association Roumanian Petroleum Industrialists welcomes constructive support of cooperation which you express.
>
> Roumanian Association is of opinion Kessler plan could be accepted as basis of discussion, it leaving each producer freedom act as he desires, and does not consider this a definite agreement between producers to restrict production.
>
> Being however ignorant of possibilities under American laws Roumanian Association requests that if discussion on basis Kessler plan impossible you indicate alternative concrete proposal equitable for all which API may care submit as basis for conference.

Whether or not the American organization will set forth a more definite plan for carrying out the suggestion in its first cable now remains to be seen. At the time of going to press President Beaty declined to make any statement in the matter and it is known that he is preoccupied at the moment with domestic problems which he holds to be very urgent.

Those who are interested in the possibilities of the subject are urged to read the letter of Mr. M. Constantinesco of the Creditul Minier, a leading Roumanian petroleum organization reproduced below. Mr. Constantinesco's thought that such a conference if held should include the Russians is widely recognized as a factor of importance although a doubt has been expressed in some quarters as to whether the Russians could be prevailed upon to make any genuine concessions in a plan of cooperation.

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Roumanian Comment on Kessler Plan

TO THE EDITOR OF WORLD PETROLEUM:

J. B. AUG. KESSLER, joint managing director of the Royal Dutch-Shell group, after having, in the September issue of WORLD PETROLEUM, outlined the situation of the world petroleum industry and emphasized the necessity for international cooperation, has suggested, in an article published the following month in your review, a concrete plan for the realization of this cooperation.

The proposition presented by Mr. Kessler is of exceptional importance, both because of his personality, and because of the position he occupies in the petroleum industry of the world.

The fact that world cooperation in the petroleum industry is recommended by one of its principal executives, shows that the views of certain directors of trusts, who hope to solve the petroleum problem by overproduction and annililation of small producers can hereafter be considered as proscribed.

Growing interdependence between national industries in the various countries of the world, makes cooperation necessary by means of agreements for the application of a rational plan of production and distribution.

It has often been charged that the practice of rational methods in the different branches of industry, by inducing overproduction, became the principal cause of the present crisis. Actually it is just because these methods have not been applied equally on a world-wide scale, and because there has not been any rational coordination between production, distribution and consumption, that an anarchical development of production has taken place without consideration of the possibility of adequate distribution and normal consumption.

In arriving at a solution for problems of the petroleum industry Mr. Kessler, who, following English tradition, is individualistically inclined, ascribes to the Governments a role limited solely to the obligation of making certain dispositions adopted by the representatives of the petroleum industry of the principal producing countries. Certain Governments are directly interested in this industry, both by reason of the oil fields which they possess and by the revenues that they receive. They intend to continue their policy in this matter, so I do not think it would be possible to enter into agreements excluding the Governments which might better preside over discussions between the experts of the principal producing and distributing companies.

The fact that petroleum is not distributed in nature in the same manner as other raw materials, will assist the adoption of a plan of cooperation. Mr. Kessler takes advantage of this fact and, as an alert business man, wishes to eliminate every difficulty opposing rapid realization of an agreement. He begins, therefore, by recommending the elimination of a whole series of producing countries. Of course, it is desirable to simplify the problem as much as possible, by limiting the number of countries to enter the agreement. It is also

true that, in order to reach a practical basis for agreement one cannot simplify too much by neglecting certain factors which might bring about the future failure of the arrangement.

Since a serious reception is assured for the plan on the part of the important executives of the industry who are aware of the gravity of the present situation, the best plan would be, to discuss amply and examine completely the problems and difficulties that may arise, in order to avoid a premature solution, which would soon reveal itself as inapplicable.

The example of the agreement concluded in Roumania in 1930 for the conservation of production, an accord which lasted only a few months, is sufficiently edifying.

One of the fundamental conditions of success in the realization of an agreement is that it be of sufficient duration to allow the beneficial effects to be felt. As present excessive stocks will hang over the market for many months the agreement might be abandoned as ineffective at the end of the three months suggested by Mr. Kessler. For international cooperation among producers to be fruitful, it should last several years. the agreements made by Governments and by associations of productors of each country, being a sufficient guaranty of its correct application during that period.

The suppression of the agreement, envisaged by Mr. Kessler as soon as prices reached a certain level, seems inopportune, particularly as it would be difficult to negotiate a second agreement if prices should again go below certain limits.

So far as these limits themselves are concerned, it should be taken into account that they do not depend solely on the petroleum industry, but also on general economic conditions in the consuming countries and, therefore, the rise in price would probably be slower than anticipated.

The aim should be continued and uninterrupted balancing of production and consumption, by harmonizing and consolidating the interests of producers and consumers.

Taking into account the above considerations, I feel that a cooperative plan should include all exporting petroleum producing countries; not only the United States, Venezuela and Roumania. The fact that production in some of the most important countries has not varied during the last two or three years, would not relieve them from restricting their production, which previously had increased considerably. Such is the case of Persia, the Dutch Indies, etc.

In order to appreciate the factors which have accentuated the petroleum crisis, one should not be limited to consideration of only the last two or three years. Certain countries like Roumania have increased their production during the past few years, which increases have done little else than reestablish them in their pre-war position. Their increases in output are slight compared to those of other countries like Venezuela where production—insignificant 10 years ago—is today four times that of Roumania.

Concerning those exporting countries whose production is at present decreasing, Mexico for example, they also should participate in a general agreement, because this decrease is due to the low level of present prices. In this manner an artificial increase in their production, resulting from the restriction program of the other countries and the increase in prices that would follow, might be avoided.

Participation of the U. S. S. R. is equally necessary, as long as importation of Soviet products is not prohibited by capitalist countries. This participation would be of the first importance, especially for Roumanian producers, who, without sufficient compensation would be most severly hit by a new increase in production as well as exportation of Russian petroleum products which would be favored by better prices.

Upon fixing the reduction to be applied to the production of each country, in order to arrive at a workable agreement, the location of producing countries should also be taken into consideration, in order to facilitate planned distribution of their products.

Control of European markets by American and Asiatic products and the practical elimination from the market of European products, on account of the severe competition of the former, should be ended by reserving for America and Asia the American markets—North and South America; African markets—middle and South Africa; and the Asiatic market with the exception of Asia Minor and Siberia.

To avoid excessive competition, with its wasteful methods it would be necessary to harmonize prices in different markets in such a way that the benefits realized would be as nearly as possible equivalent, thus discouraging producers from entering at the same time into all the markets. Rational geographic distribution of petroleum products would only be possible if the agreement were to cover several years with advance notice of at least six months.

Concerning participation of producers in new countries such as Iraq, it is possible even to estimate the contingents to be allowed, by seting aside a certain proportion of their production for unforseen circumstances. Especially in the case of Iraq, the fact should not be forgotten, as Mr. Kessler states, that the groups that are interested in the production of that country, are also producers in other countries and that consequently they should be particularly interested in decreasing their production, compensated by the production of Iraq. On the other hand the fact should be taken into account that, in case a general agreement is not reached, the development of production in that region would be unfavorably influenced by present low prices and by the struggle going on to hold markets.

A permanent accord we consider impossible without fixing quantities of petroleum that each country would have the right to export. The question of domestic consumption could be arranged by national agreement.

The system of bounties accorded to those who would export a smaller amount than was assigned to them and the establishment of progressive penalties for those who would export in excess of their share, is the most efficient way of solving the problem.

As a basis for making assignments, exports of each producing country for the past several years could logically be adopted.

It would be difficult to base export quotas on the simple reports presented by producers, because in that case it would be very easy for producers in countries that are financially rich, to declare a much larger quantity that they really intend to produce, by advancing the figures provided in the Kessler plan. At the end of the quarter bounties that should go to the poorer countries whose production as reported in their statements would come nearer to the quantity realized, would largely go to those countries which had placed their production limit too high.

It would be best then, as stated above, to enter into an ample discussion of the matter, attacking, in the first place, the arid question of assignments rather than to come to a hurried understanding which would in practice be inapplicable and would result in the end in dissatisfaction to everyone.

The drilling question could easily settle itself if the duration of the accord were fixed at several years, during which time its exact execution would be guaranteed by the Government and the association of producers of each country.

Independently of different personal points of view under which the world cooperation of the petroleum industry can be envisaged, the importance of the Kessler plan cannot be disregarded.

The Kessler plan, which demonstrates the absolute necessity of the petroleum industry reducing its production, and which considers restriction by all producers, large or small indispensable and suggests means for effective restriction proves that the idea has passed from the simple phase of desiderata to that of a concrete positive proposition.

Without an international agreement, as has been foreseen by some observers for many years, tangible results cannot be achieved. To resort to local measures, even the most drastic, such as those taken by the Governor of Texas for example, is not apt to modify the general situation of the industry throughout the world.

A general conference of representatives of all the exporting countries is indicated. Its role would be to endeavor to secure means of balancing production and consumption, taking into account existing stocks, avoiding excess drillings. and applying a more rational distribution of the products in consuming countries.

The Association of Petroleum Industrialists in Roumania understands the importance of the Kessler plan, having examined it in the course of several meetings and given it the full attention it deserves. As a result of this consideration they favor the convocation of an international conference.

MICHEL CONSTANTINESCO,
Managing Director.

SOCIETE CREDITUL-MINIER.

Bucarest, Roumania.

[Letter translated from the French]

British Situation

(Continued from page 11)

directly from the British people, some measure of protection may be expected.

Unless the companies agree to be reasonable as to selling price and show also that they are willing to let the country benefit by the improved conditions, they may be reminded of their letter of March 18, 1929, when they said to the British Government:

"It is a decided advantage for Great Britain, an importer, to keep her markets open to receive supplies from all world-sources rather than to rely on any single source of supply."

Likewise, they probably will find the House of Commons preferring to accept that statement and declining to do anything which may hurt the growing motor manufacturing trade of Britain, unless there is a compensating benefit to the taxpayer.

Venezuelan oil fire.

In any event, with or without Government cooperation, some means of raising prices must be found, and that speedily. Failing official control, a profitable standard will mean that the independents' proportion of the trade will rise to 40 percent, for the existing storage available for independent importers would enable such a volume to be handled. Those now driven from the trade would return and others would join them, for an additional business of 4,000,000 bbl. per year is not to be despised, especially if it shows a profit. It is well known that the Roumanian industry ,whose crude is selling at 5/6d per ton, against 32/6d less than two years ago, is preparing for a big drive on the British market as soon as opportunity offers. Other powerful organizations are closely watching developments. It is imperative, therefore, for the companies already engaged to act promptly, sensibly and not greedily. Otherwise, any rise in prices can be only a temporary thing and chaos will return. After all, it is surely preferable to earn profits on 60 percent of the trade, rather than to incur big losses on 75 percent.

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An Unethical Practice

ACCORDING to information received from the Department of Commerce in Washington, D. C., a news service in Boston has been making efforts to supply at $10 per copy, typewritten copies of a report by Government officials on the subject of hydrogen sulphide content of gas in oil producing wells. This, of course, is an unethical procedure and is entirely unwarranted as no one would pay $10 for a Government report which can be procured without charge, for the asking. The report in question was issued by the Bureau of Mines in September, 1931, and its authors are John M. Devine and C. J. Wilhelm.

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Spanish Monopoly

IF the Spanish Minister of Finances is successful in his endeavors, the Campsa (Spanish Petroleum Monopoly) will be dissolved together with all its contracts. In its place the Spanish petroleum industry will be operated by a committee of five, three to be nominated by the Government and two by shareholders of Campsa.

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Oil in China

APROPOS the story of drilling in China through the centuries, given elsewhere in this issue, an interesting article was published in that country in the summer of 1930 by Chun Yin, at one time senior technical expert of the Chinese Government's mining bureau at Peking, who in 1919 went to California for three years research work in petroleum engineering. He studied under Professor Lauderbach of the University of California who had visited the salt well districts of Szechuen.

Chun Yin stated that Szechuen province has been known for centuries to possess oil and natural gas. When the natives encountered oil in their wells they abandoned the holes as oil salt water is not suitable for producing clean salt, but the natural gas was conveyed by bamboo pipes and utilized to evaporate the brine in shallow pans to secure finer grains of salt and faster evaporation by boiling with gas as a fuel instead of drying by heat of the sun. Soot from the smoke was collected in canvas bags and used for writing ink.

In 1914-15 Professor Lauderbach, according to Chun Yin, investigated the Szechuen wells at the request of the Chinese Government. En route to Peking to make his report he met at Hankow the late Mr. Bemis, then vice-president of the Standard Oil Company of New York. On the way back to the United States Mr. Bemis died and whatever plans for exploration had been discussed became a closed chapter.

In the Shansi province there are about 50 oil seepages. Eighteen test wells were drilled. Three produced small quantities of oil and one hole was lost. The crews were ordered to proceed to more promising locations in Borneo. Prior to this test the late Empress Dowager ordered two wells drilled in Shansi, both shallow, yet they produced oil. There is a small topping refinery still in existence in the district. It is also believed that there is oil in Kweichow and Sinkiang provinces, and there are seepages in Kansu near the great wall of China, and it is said that extensive deposits have been found in Hsiang Hsiang.

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Naphtha Supply

COPY of an order published by the chairman of the Economic Council has been received by the Soviet commercial representative at Berlin recently. The order, which throws light on conditions in the oil industry in Russia, follows:

"All managers of syndicates, trusts and factories are instructed on their personal responsibility to reduce as soon as possible the total consumption of naphtha products by 30 percent. Naphtha products should be replaced as much as possible by other products. The greatest possible savings should be made in the use of naphtha for automobiles, tractors, etc."

▼

In adition to the tariff of 14 cents per Imperial gallon of gasoline in South Africa, it is proposed to place a tax of two cents per gallon, using the funds for road construction. Objections are made on the score that consumption being only 9,000,000 gallons, the resulting revenue will be insufficient for the purpose, good roads costing $20,000 a mile.

▼

Although Argentina produced 5,505.-965 bbl. in the first half of 1931 as recorded in the December issue of WORLD PETROLEUM, no fewer than 1,589,881 bbl. of crude were imported. Imports of petroleum products for the first half of 1931 were as follows:

Gasoline	1,036,900 bbl.
Kerosene	203,828 bbl.
Fuel oil	2,280,853 bbl.
Diesel oil	81,347 bbl.
Gas oil	24,484 bbl.

▼

At the annual meeting of the Anglo-Ecuadorian Oilfields Company, Ltd. H. C. R. Williamson, chairman, stated that Russia, in oil as in other respects, remains an enigma and a danger.

▼

WORLD PETROLEUM understands that the Iraq Petroleum Company has informed the Iraqi Government that the actual construction work on the new pipe line in the Mediteranean will begin next March and that £2,500,000 have been set aside for the purpose.

International News and Reports

AT THE close of 1931, the vote of members of the American Petroleum Institute on the question of an oil tariff stood at 1047 favoring the principle, 433 against, out of the membership of 3673. Actually, 28.5 percent of the membership voted in favor, and 11.8 percent against, to make up the total of 40.3 percent voting. Five members sent back ballots marked "not voting."

▼

It is reported that what is believed to be a large petroleum oilfield, has recently been discovered in Hsiang Hsiang in the Hunan district; that the oil is of fine quality and may have a total potential of 1,400,000,000 bbl. No confirmation has been received.

▼

The import duty on gasoline entering New Zealand has recently been increased to 16 cents a gallon. Gasoline is now retailing at prices varying from 52 cents to 64 cents per Imperial gallon. New Zealand imported 1,276,285 bbl. of gasoline and kerosene during the first eight months of 1931.

▼

Of the $70,000,000 estate of Harry Payne Whitney, financier and sportsman, who died on October 26, 1930, the following large holdings of oil company stock were recorded: Standard Oil Company of New Jersey, 66,200 shares, $3,560,075; Standard Oil Company of California, 16,666½ shares, $2,530,654; Standard Oil Company of New York, 73,680 shares, $1,924,890; The Texas Corporation, 33,000 shares, $1,336,500; Standard Oil Company of Indiana, 307,048 shares, $1,207,564; Dominquez Oil and Fields Company, 60,000 shares, $1,050,000; Standard Oil Export Corporation, 2,587 shares, $271,635; Standard Oil Company of Ohio, 12,240 shares, $549,270.

▼

The Indian Mining Federation is agitating for the Indian State railways to abandon the use of fuel oil for its locomotives and replace it with coal on the grounds that economy would be effected because of the present low price of domestic coal as compared with imported fuel oil. The Indian railways use about 800,000 bbl. of fuel oil annually.

▼

According to a well informed authority, the cost of products by the hydrogenation process depends upon the type of stock treated and the type of product desired. Naturally, the cost of raising a low grade crude oil to gasoline is greater than the cost of raising a selected gas oil stock to gasoline. However, generally speaking, whenever crude is valued at a dollar or more per barrel we would expect an extensive field for the use of hydrogenation, partcularly if fuel oil sells at a price practically competitive with coal.

▼

Chile's Proposed Oil Monopoly Unattractive to Private Capital

SHOULD the oil monopoly bill now before the Chilean Senate become law it is extremely doubtful if any responsible oil companies will be found willing to enter into the partnership with the Government as provided by its terms. The whole proposition, in the view of petroleum authorities who have studied the bill, is obviously unattractive from many viewpoints, due to the risks involved and the questionable return, especially as there is no guarantee for the capital which would have to be invested. It is doubtful if the project would receive private financial backing, at least from experienced international oil marketers. Hence, it is probable that the State would be obliged to operate the monopoly alone. The bill was passed by the House of Deputies on October 31, and at the time of writing has been reported out of the Senate Commission where it has been studied for some weeks.

The Bill reserves for the State, either alone, or in partnership with national or foreign firms, a 17 year monopoly on the importation and refining of petroleum, as well as the sale and distribution of petroleum and its byproducts. It provides that Government as partner to the concessionaire, without investing any capital, would receive annually a revenue equivalent to present duties collected on petroleum products of about 60,000,000 pesos per annum; that after allowing the concessionaire eight percent interest and three percent depreciation, the balance of the net profits if any, would be divided 75 percent to the Government and 25 per cent to the concessionaire. After 17 years all of the physical assets would become the property of the State.

To carry out this monopoly plan, the properties of the oil companies now operating in Chile, would be expropriated. It would be necessary for the concessionaire to raise 50,000,000 pesos (about $7,250,000) as working capital and payment for oil companies' properties confiscated. If a refinery were constructed later, the concessionaire would have to raise the additional capital necessary.

Based on the sales monopoly, it is estimated by the Government that the net profit would amount to about 20,000,000 pesos ($2,400,000). This however, is a Government estimate, based on consumption figures as reported in July, 1930, which range from 10 percent to 20 percent higher than actual figures on all products. Cost of products in the United States, transportation and other administration expenses are all theoretical figures, prepared by people with no actual experience in the petroleum industry.

The operation of a marketing monopoly by Government administration or by inexperienced concessionaire in partnership with the Government, would probably in actual practice, show a loss, instead of the profit indicated above. No allowance has been made for unforeseen risks such as bad debts, possible losses in exchange, which is a serious risk under present conditions, because the gross income from sales in Chilean pesos would remain constant unless selling prices to the public were increased, whereas, operating costs such as purchases of imported products, ocean freight, etc., would increase proportionately to the depreciated peso. Furthermore, the Chilean public probably would not tolerate any increase in gasoline price, whih is now at an exorbitant figure because of the fact that 44 percent of the present price to the public for gasoline, represents Government import duties and taxes.

An oil refinery cannot be constructed for four years, until the State decides whether or not a coal hydrogenation plant shall be established, and $100,000 per annum from the profits of the monopoly must be devoted to the study of hydrogenation and distillation of national coal.

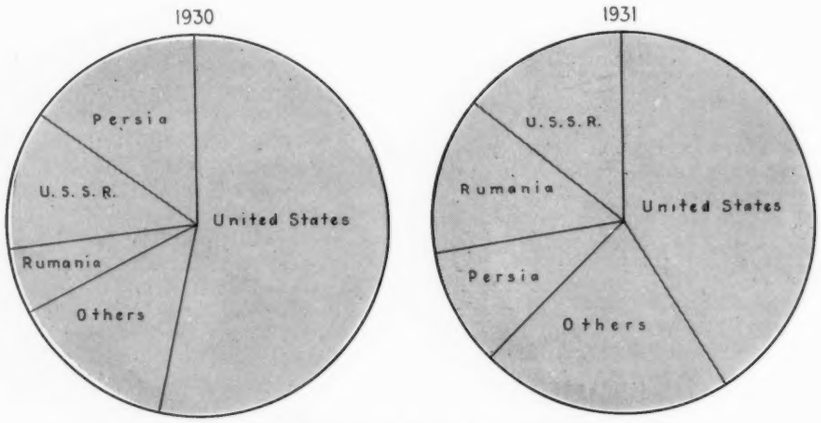
Changing Trends In International Trade

Statistics for 1931 Show Heavy Decrease in Export of Petroleum Products from U. S.— Soviet Union, Roumania, and D. W. I. Have Gained Ground in Competitive Market.

WORLD production of petroleum during 1931 has been slightly less than that of either of the two years preceding. With figures for 11 months of the year complete and December estimated it appears that total output will be approximately 1,352,000,000 bbl. in comparison with 1,409,635,925 bbl. in 1930 and 1,484,041,000 in 1929. The reduction of 57,513.190 bbl. or four percent from 1930 took place mostly in the United States where a decrease of nearly 50,000,000 bbl. is indicated by the most recent reports.

While the main deduction to be drawn from the production record of the past year is that the problem of bringing about a balance between supply and demand remains still unsolved some noteworthy changes have taken place in the distribution of petroleum and its products, particularly in the relative share of the world's trade requirements supplied by various sources of production. In the struggle for international markets certain producing territories have gained ground while others have suffered material losses.

Most noteworthy of the developments revealed by statistics of international commerce in petroleum and its products is the sharp decline in the export trade of the United States. While consumption has shown a slight decline in some of the important European countries others have increased their demand as has the United States. The total world requirement, when returns for the full year are in, will be found to have undergone very little change, probably not more than that which has taken place in production. In every important market to which the United States sends its exports, however, the quantities shipped by American exporters were substantially smaller in 1931 than in the preceding year while the value of these exports declined in still greater proportion on account of the lower price levels prevailing.



United Kingdom motor fuel market,—sources of supply.

For the ten months ending October 31, 1931 exports of gasoline and other light finished products from the United States amounted to 37.523,638 bbl. as compared with 55,423,542 bbl. in the correspnoding period of the year preceding. This is a decrease of 17,899,904 bbl. or 32.3 percent. When figures for the full year are available they will show practically the same relative situation in comparison with last year or possibly a slight accentuation in the proportionate decline as shipments were sharply curtailed in the final weeks of the year.

Analysis of the destinations of shipments from the United States shows that the loss of trade incurred by American exporters was not confined to any one quarter of the globe, but extended to all markets. The accompanying tables give a comparison of exports from the United States to the principal importing countries in the first ten months of 1930-31.

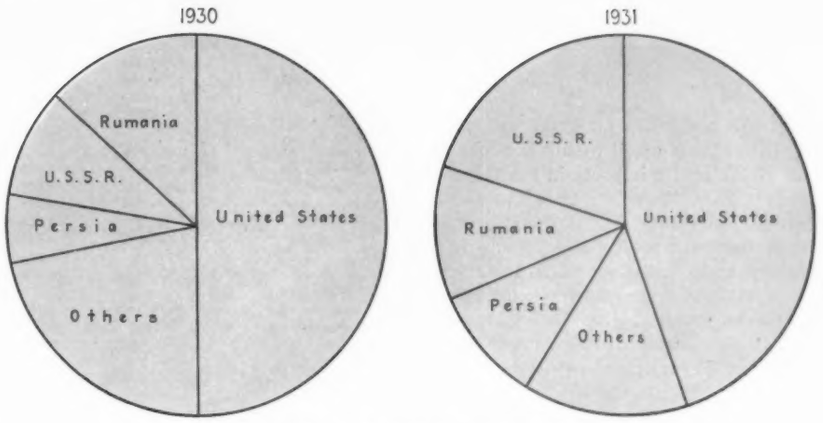
U. S. Motor Fuel Shipments to Europe
(Barrels of 42 U. S. gallons)

Country	Jan.-Oct. 1930	Jan.-Oct. 1931	per-cent
United Kingdom	17,193,218	11,392,140	—33.7
France	8,132,886	5,208,575	—36.
Germany	1,889,050	755,423	—60.
Belgium	1,425,418	1,340,238	— 6.
Netherlands	1,322,579	1,559,057	+17.
Spain	1,529,918	1,006,854	—34.
Sweden	1,093,010	1,131,938	+ 2.6
Other Europe	2,233,755	1,688,958	—24.
Total Europe	34,819,834	24,083,183	—30.8

U. S. Motor Fuel Shipments to Countries Other than Europe
(Barrels of 42 U. S. gallons)

Country	Jan.-Oct. 1930	Jan.-Oct. 1931	per-cent
Canada	3,779,233	2,578,366	—31.7
Cuba	1,006,640	277,848	—72.4
Dutch W. Indies	2,558,013	1,068,830	—58.
Argentina	1,354,457	347,497	—74.
Brazil	1,043,477	708,065	—32.
Other S. America	972,086	644,447	—33.7
Australia	2,495,527	1,829,989	—26.6
China and Hong Kong	599,667	455,185	—24.
South African Union	1,000,163	772,708	—22.7
Total	14,809,263	8,682,935	—41.3

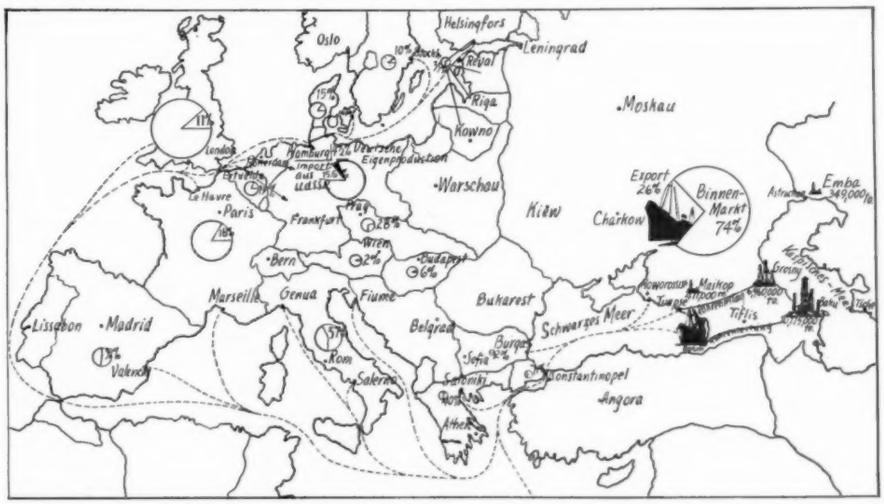
Comparison of the export movement from the important producing countries shows that Roumania, the Soviet Union and the Dutch West Indies have increased their foreign sales at the expense of the United States. During the first 10 months of 1931 Roumania practically doubled its exports of refined products, making the heaviest increase in sales to the United Kingdom and France, two countries in which sales of American products have shown a serious falling off. The Soviet Union has expanded its sales in somewhat smaller proportion than Roumania but has increased its business in many markets, including France, Germany and the United Kingdom. Shipments from the Dutch West Indies to the United States decreased nearly 2,000,000 bbl. in the period January-October 1931 as compared with the same period in 1930; but at the same time Dutch West



German motor fuel market,—sources of supply.

Indies sales to Europe increased nearly 1,000,000 bbl. while its trade with Europe increased in almost equal amount, exports to South America gained over 700,000 bbl. and smaller increases were recorded in shipments to Canada and Australia. The gains in other directions were more than sufficient to offset the loss in trade with the United States.

Producing territories which, like the United States, have experienced a decline in export shipments during 1931 are the Netherlands East Indies and Persia. Statistics for these countries are not sufficiently complete to form an exact estimate for the year but apparently the decrease in the export business of the former was due to reduced demand in the Orient while Persia has increased its shipments to France and Germany but has lost ground in the United Kingdom.



Production and distribution of Russian motor fuel in 1930 as pictured by D.E.R.O.P.

increased offering of Roumanian cargoes and through expanding shipments of Soviet oil. The Russians in 1927 asked a quota of 1,500,000 bbl. for shipment to Britain which was refused but since that time they have increased to 7,000,000 bbl. of petroleum products including 2,000,000 bbl. purchased and marketed by the Medway Oil and Storage Company which concern is owned by the Shell, Anglo-Persian and Anglo-American in a triangular combination.

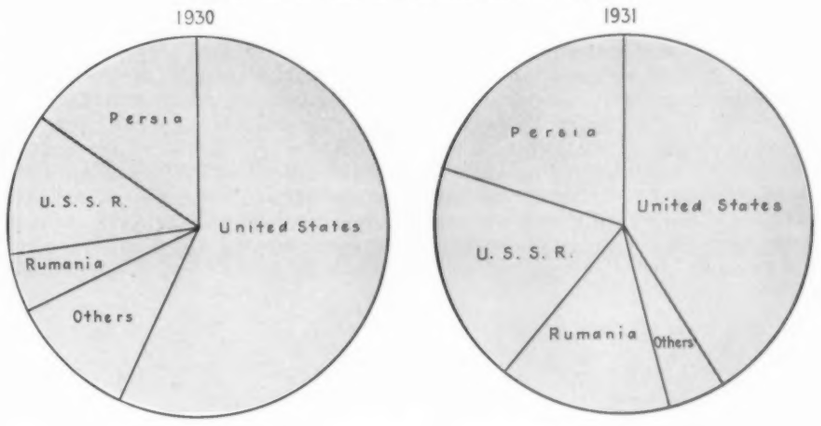
An examination of the trade situation in some of the chief consuming countries reveals certain factors which have helped to bring about the changes noted above and indicates the probable trend of events in these markets in the immediate future.

A tense situation exists in the British market as a result of the extreme competition that has developed there. For the past several years something like 85 percent of the total sales of petrol in Britain have been shared by the Royal Dutch-Shell, Anglo-Persian and Anglo-American, sometimes referred to as the "Big Three" while the balance of the trade was divided among a number of other interests. Within the past two years, however, pressure upon the British market has increased through the entry of other American companies, through

The recent merger by Shell and Anglo-Persian of their marketing interests in Great Britain indicates a probable change in alignment. Apparently it is the policy of these companies to derive whatever advantage they can from the "Buy British" movement which is being pressed so vigorously at the present time. There are indications that a subterranean movement has been started to exclude from the market non-British production including that of the American companies who have been participating in the British petroleum trade. This movement is aided by the departure of Great Britain from the gold standard. It may be regarded as significant that prices have not been advanced in proportion to the decline in the exchange value of the pound and that the expected increase in wholesale quotations has not taken place. The Government is being urged in certain quarters to place a duty on importations of non-British oil and this may result in a further reduction of receipts from other quarters. Even though no restrictive legislation is adopted it appears certain that American trade in oil with the British market will suffer a serious diminution and that the Soviets will be in a stronger position to compete for this business since their need for engineering products will enable them to accept payment in this form rather than in the expensive dollars that are needed to pay for American imports.

As a measure of national security and economic advantage the French Govern-

French motor fuel market,—sources of supply.



ment has adopted a policy of encouraging the refining of oil within the country and of taking its imports in the form of crude rather than in refined products. Several refineries are now being erected and others are projected. To ensure a healthy home industry the Government has established quotas for existing oil companies and will give no import permits to other companies planning to enter the French market. Since companies are not allowed to increase their quotas there would seem to be no occasion for drastic competition.

The opening for such competition has been presented by the fact that the Government, due to the influence of Socialist members of its Parliament, has issued permits to some 700 individuals allowing them to import gasoline to the extent of not more than 2100 bbl. each per month. Many of these permits are inactive but a number of small companies have taken advantage of them to set up business in the domestic market and with their negligible overhead are able to undersell the large companies. In 1930 it was estimated that these small dealers held about three percent of the trade but in 1931 their business increased and is now perhaps 10 percent of the total. The growth in their operations has been due to the possibility of acquiring distress cargoes from Roumania, and some from the United States, have been made as low as 2½ cents per gallon. The large companies, instead of absorbing distress offerings, allowed them to fall into the hands of small dealers. The result has been a price war which is costing the major companies a considerable amount. France imports about 30,000,000 bbl. of petroleum yearly and so forms a substantial market.

In other parts of the Continent disturbance of the equilibrium through increasing pressure of competition is occurring in various places. This is the case in the Scandinavian countries where the Russians have been cutting prices in an effort to get control of these markets, an effort which is being strenuously resisted by the other interests operating there. In Holland and Switzerland the over-competition is blamed on American companies by the European interests and it is to be observed that the Netherlands is one of the very few countries to which American shipments increased during 1931. Spain and Turkey have established oil monopolies and others are contemplating similar action. Germany is perhaps the least disturbed of important Continental markets. Prices are reasonably well maintained although the Soviet has its own distributing organization in the country. The German Government is accepting Russian oil in partial settlement of its trade balance which amounts to about $68,000,000 in favor of Germany and is asking American and British companies operating in Germany to sell it. Indications of a tightening of the lines of competition in Germany is seen in the recent expansion of Sinclair interests there and in the announcement just made that Pan-American has purchased a German disturbing company.

From present indications the prospect of American exporters recovering in 1932 the trade that they have lost in Europe during the past year are not very encouraging. In the United Kingdom, the most important of the European markets, a well defined effort is under way to exclude foreign products for the benefit of British producers and this movement may receive support from Parliament. If this does not occur Britain's departure from the gold standard will favor British companies and likewise the Soviets who are in a position to accept manufactured goods in settlement of their balances.

Unless some agreement is reached among the more important producers looking toward the stabilization of the oil industry, of which there seems no immediate prospect, the pressure of Soviet and Roumanian oil is not likely to be lessened in any of the markets in which they come into competition with exports from the United States. Refiners of the Netherlands West Indies, failing their former market in the United States, undoubtedly will fight to maintain a place for their output in other markets. Thus the outlook for 1932, so far as it can be judged from present indications, is for a continuation and probable accentuation of the existing struggle for markets and a possible further decrease in the proportionate share of the United States in the international trade in petroleum.

U. S. Exports of Crude and Refined Products

(U. S. Dept. of Commerce Figures in Barrels of 42 U. S. Gal.)

Year 1931	Crude Oil	Gasoline	Fuel Oil Incl. Gas Oil	Other Refined Products	Total
January	1,919,000	4,903,000	2,980,000	2,208,000	12,010,000
February	1,710,000	3,606,000	2,555,000	1,831,000	9,702,000
March	1,586,000	2,946,000	2,260,000	2,035,000	8,827,000
April	1,826,000	4,187,000	2,232,000	1,745,000	9,990,000
May	2,268,000	4,992,000	2,675,000	2,710,000	12,645,000
June	2,544,000	3,265,000	2,633,000	1,855,000	10,297,000
July	2,621,000	4,473,000	2,698,000	1,964,000	11,756,000
August	2,867,000	4,036,000	2,067,000	1,980,000	10,950,000
September	2,296,000	3,074,000	2,217,000	1,709,000	9,296,000
October	2,389,000	3,325,000	2,244,000	1,997,000	9,955,000
November	2,449,000	3,743,000	2,209,000	1,862,000	10,263,000
Total	24,475,000	42,550,000	26,770,000	21,896,000	115,691,000
Year 1930					
January	1,808,000	5,527,000	3,294,000	3,221,000	13,850,000
February	1,732,000	4,888,000	2,835,000	3,400,000	12,855,000
March	1,944,000	6,256,000	3,613,000	2,819,000	14,632,000
April	1,900,000	5,840,000	3,730,000	2,912,000	14,382,000
May	2,202,000	5,012,000	2,401,000	2,055,000	11,670,000
June	2,508,000	7,247,000	3,961,000	3,124,000	16,840,000
July	1,973,000	5,692,000	3,095,000	2,253,000	13,013,000
August	2,407,000	6,687,000	3,057,000	2,819,000	14,970,000
September	1,961,000	4,028,000	2,373,000	2,057,000	10,419,000
October	2,167,000	6,323,000	3,032,000	2,150,000	13,672,000
November	1,765,000	3,688,000	1,959,000	1,807,000	9,219,000
Total	22,367,000	61,188,000	33,350,000	28,617,000	145,522,000

U. S. Imports of Crude and Refined Products

(U. S. Dept. of Commerce Figures in Barrels of 42 U. S. Gal.)

Year 1931	Crude Oil	Gasoline	Fuel Oil Incl. Gas Oil	Other Refined Products	Total
January	4,356,000	1,116,000	2,471,000	14,000	7,957,000
February	4,789,000	948,000	1,956,000	13,000	7,706,000
March	3,715,000	1,607,000	2,449,000	9,000	7,780,000
April	4,162,000	1,348,000	2,091,000	19,000	7,620,000
May	4,512,000	1,050,000	1,788,000	9,000	7,359,000
June	3,987,000	964,000	1,412,000	20,000	6,383,000
July	3,588,000	1,528,000	1,886,000	21,000	7,023,000
August	2,702,000	1,244,000	1,958,000	14,000	5,918,000
September	3,246,000	1,256,000	2,204,000	2,000	6,708,000
October	4,106,000	1,181,000	2,738,000	12,000	8,037,000
November	3,604,000	586,000	1,961,000	3,000	6,154,000
Total	42,767,000	12,828,000	22,914,000	136,000	78,645,000
Year 1930					
January	5,450,000	1,079,000	2,652,000	75,000	9,256,000
February	4,321,000	953,000	2,257,000	14,000	7,545,000
March	4,827,000	1,369,000	2,254,000	91,000	8,541,000
April	5,781,000	1,319,000	1,837,000	58,000	8,995,000
May	4,984,000	1,768,000	1,810,000	25,000	8,587,000
June	5,767,000	1,670,000	2,287,000	71,000	9,795,000
July	5,877,000	1,741,000	2,286,000	13,000	9,917,000
August	5,059,000	1,827,000	2,489,000	13,000	9,388,000
September	5,808,000	1,538,000	2,035,000	37,000	9,418,000
October	5,061,000	1,620,000	2,165,000	3,000	8,849,000
November	4,467,000	1,079,000	1,712,000	2,000	7,260,000
Total	57,402,000	15,963,000	23,784,000	402,000	97,551,000

International Trade in Motor Fuel

Development of New Trends in World Gasoline Trade Indicates Possibility of Less Important Position for U. S. as Exporter.

By Chester Lloyd Jones

Director, School of Commerce
University of Wisconsin

IN the petroleum industry, as in many other lines of production, the current depression in business has brought a sharper decline in values than in volume of trade. While profits have decreased or disappeared with the great overproduction that has accentuated the difficulties of hard times, utilization of petroleum products for the activities of domestic and foreign commerce has held up surprisingly well. The foundation of the market for any commodity is its use and there are few of the great staples which, at least until very recently, have held up in quantity of sales comparably with petroleum, especially in the United States where consumption has increased internally, although export sales have shown a sharp decline.

It is evident, however, that apart from a drop in consumption in many countries there are a number of changes in the conditions under which the international trade in petroleum and its products is being carried on and that these have at least temporarily changed the American contribution to the total.

Some of the new conditions are arising with changes in the habit of life of the more advanced populations of the world. Such are those accompanying the increased mechanization of industry, especially in Europe, which will increase demand for petroleum products both for power and for lubrication, and the spread of the good roads movement which will broaden the market for gasoline especially, but also for a number of less important derivatives. Improvement in general business conditions throughout the world will amplify this trend to a marked degree.

Other changes result from new factors within the oil industry, such as the opening up of new fields of production, especially in parts of the world offering but little promise of great growth in local consumption of petroleum and will therefore send most of their production to the world market. Such are the developments in northern South America and Russia—especially in the fields at the extreme east of the Asiatic continent, and the forthcoming fields in Iraq. Growth of this sort may occur, and has occurred, even when it is of doubtful benefit for the industry or for society at large due to outrunning the market that has developed.

A second change which has had a rapidity of growth still unappreciated by the public is in the fiscal policies adopted by Governments—toward (1) the petroleum industry and (2) petroleum products. Greater State control has been aimed at in a number of countries, including Spain, France, Russia and in different forms more recently in a number of Latin American countries. Whether action of this sort will result in increased production or increased consumption, in greater import or export trade, or in larger public revenue it is impossible to say. Results will vary in different areas; but that such legislation will have an effect on the industry and its outlet markets is hardly to be doubted.

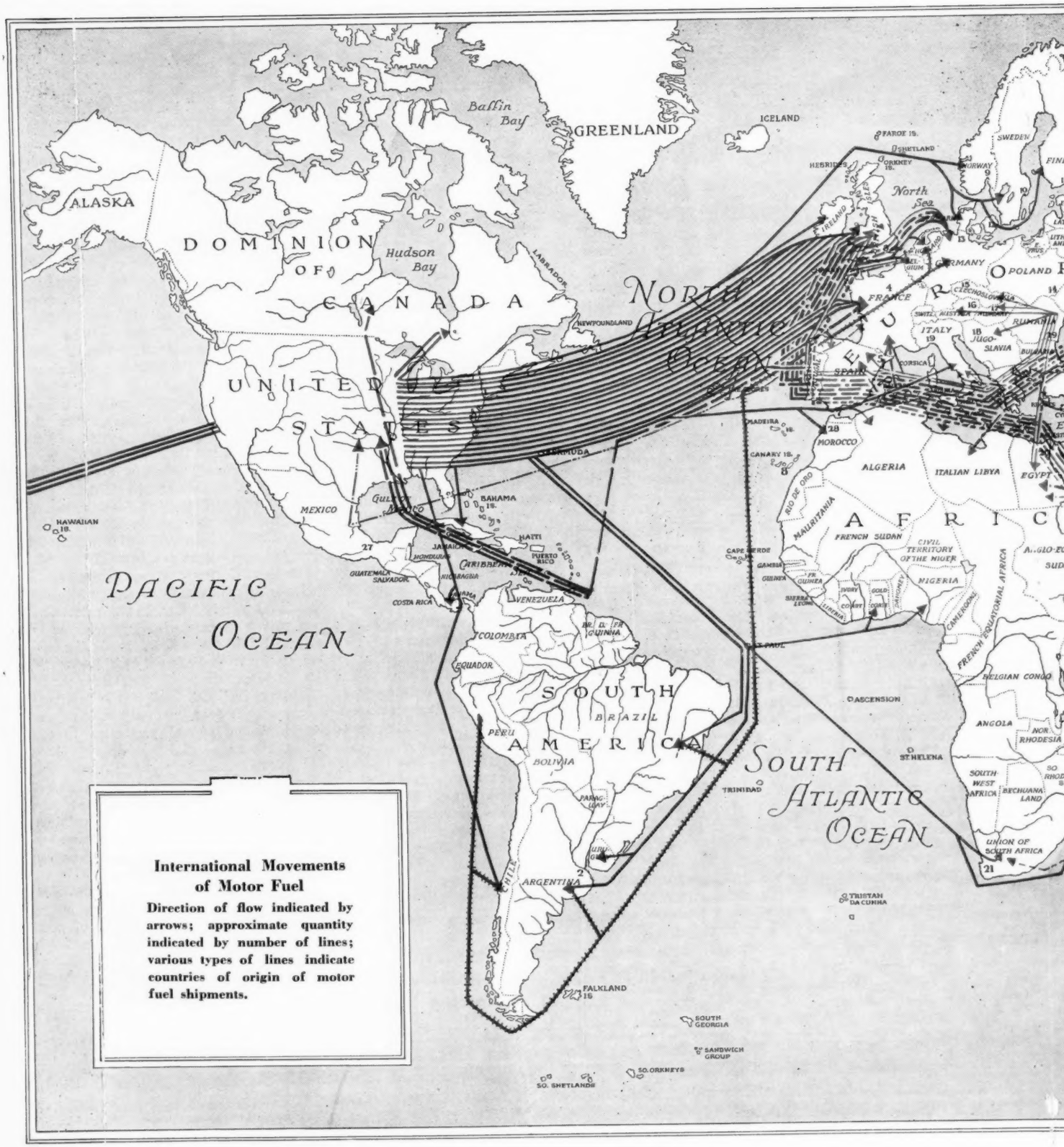
Of a somewhat different character are the laws affecting petroleum products—usually frankly adopted as a means of increasing public revenue, often to secure money for specified purposes and frequently aimed also at the encouragement of a local petroleum industry. The most striking example of legislation of the first-named sort is State taxation of gasoline sales in the United States, which in 1930 affected 351,221,642 bbl. of gasoline used by motor vehicles and brought in a yield of $493,865,117, an amount greater than the total ordinary expenditures of the national Government a generation ago.

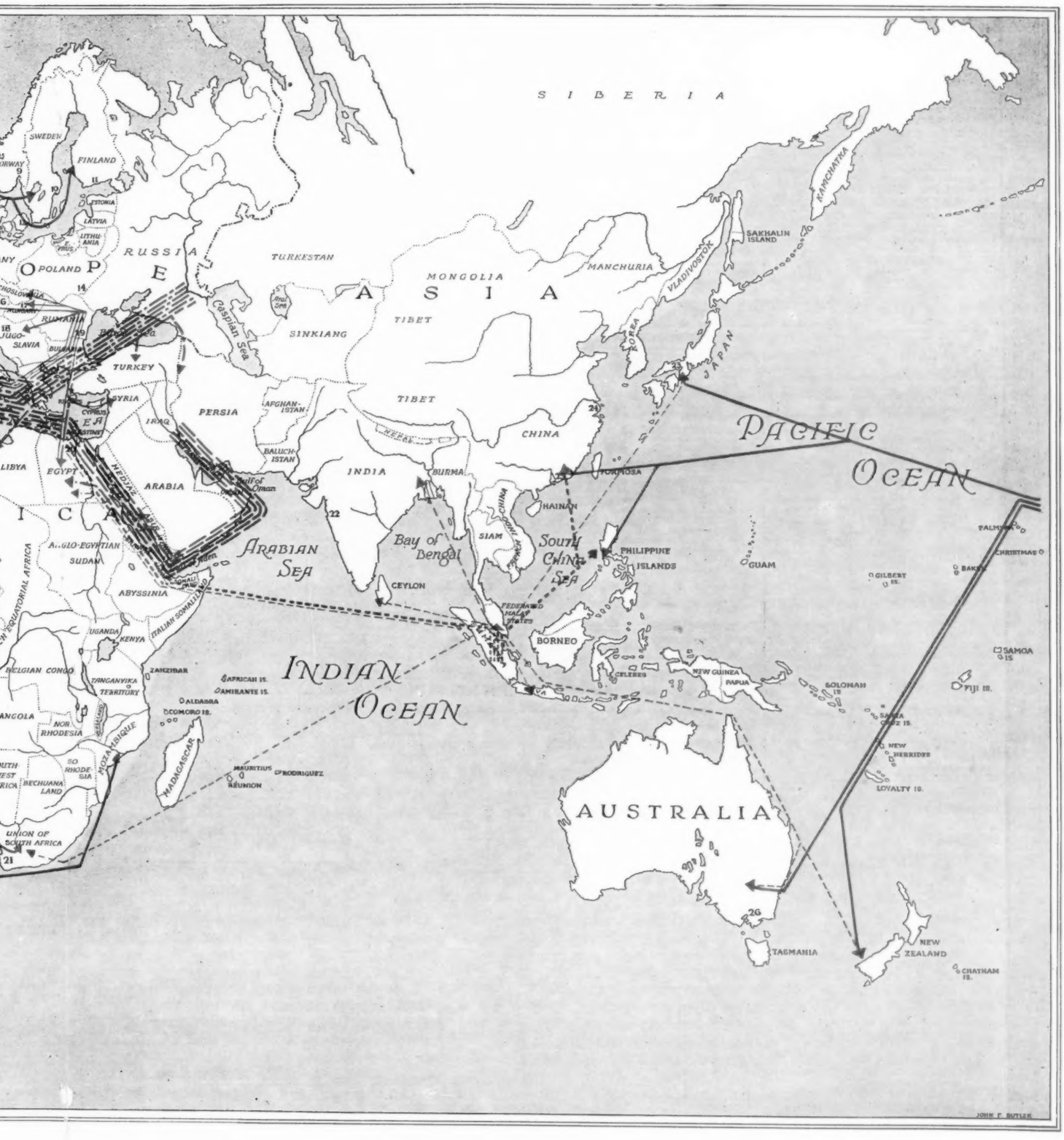
Other countries have in recent years, when every available source of income has been drawn upon so assiduously by those who must make public budgets balance, put special taxes upon the petroleum industry and upon those who use its products. Production, import, and consumption taxes have greatly increased in number and in yield.

There is still another development of greater influence than is often realized now affecting both local and international trade in petroleum products. The establishment of new refinery equipment is closely linked in many countries with the national fiscal policy as to petroleum. In petroleum producing countries or in those holding petroleum producing colonies, taxation by legislation frequently tends to encourage the establishment of refining facilities under the national flag, thus assuring employment to the local population and protection to the local balance of payments. Even in some countries like France and Spain which are not important petroleum producers the laws passed aim to put a premium on local refining. In such cases also the wages of manufacture "stay at home" though the collateral argument often urged in favor of such legislation, that it increases the national self-sufficiency, has obviously only limited validity since if the outbreak of war

(Continued on page 28)

Comparative Exports of Gasoline From U. S. and Three Principal Competing Regions


Baffin Bay
GREENLAND
ICELAND
ALASKA
DOMINION OF CANADA
Hudson Bay
LABRADOR
NEWFOUNDLAND
NORTH ATLANTIC OCEAN
UNITED STATES
BERMUDA
BAHAMA IS.
HAWAIIAN IS.
MEXICO
HAITI
JAMAICA
PUERTO RICO
HONDURAS
CARIBBEAN SEA
GUATEMALA
SALVADOR
NICARAGUA
COSTA RICA
PANAMA
VENEZUELA
COLOMBIA
ECUADOR
PERU
BOLIVIA
PARAGUAY
CHILE
ARGENTINA
BRAZIL
SOUTH AMERICA
PACIFIC OCEAN
TRINIDAD
FALKLAND IS.
SOUTH GEORGIA
SANDWICH GROUP
SO. ORKNEYS
SO. SHETLANDS
SOUTH ATLANTIC OCEAN
ASCENSION
ST. HELENA
TRISTAN DA CUNHA
FAROE IS.
SHETLAND
ORKNEY IS.
HEBRIDES
IRELAND
North Sea
SWEDEN
NORWAY
DENMARK
GERMANY
POLAND
FRANCE
CZECHOSLOVAKIA
SWITZ.
AUSTRIA
HUNGARY
ITALY
JUGO-SLAVIA
RUMANIA
BULGARIA
SPAIN
CORSICA
MADEIRA IS.
CANARY IS.
MOROCCO
ALGERIA
ITALIAN LIBYA
EGYPT
RIO DE ORO
MAURITANIA
FRENCH SUDAN
CAPE VERDE
GAMBIA
GUINEA
FR. GUINEA
IVORY COAST
GOLD COAST
NIGERIA
CIVIL TERRITORY OF THE NIGER
CAMEROONS
FRENCH EQUATORIAL AFRICA
BELGIAN CONGO
ANGOLA
NOR. RHODESIA
SOUTH WEST AFRICA
BECHUANA LAND
UNION OF SOUTH AFRICA
AFRICA
International Movements of Motor Fuel
Direction of flow indicated by arrows; approximate quantity indicated by number of lines; various types of lines indicate countries of origin of motor fuel shipments.


SIBERIA
SWEDEN
FINLAND
ESTONIA
LATVIA
LITHUANIA
RUSSIA
POLAND
TURKESTAN
MONGOLIA
MANCHURIA
VLADIVOSTOK
SAKHALIN ISLAND
KAMCHATKA
ASIA
Aral Sea
Caspian Sea
SINKIANG
TIBET
JAPAN
RUMANIA
YUGO-SLAVIA
BULGARIA
TURKEY
SYRIA
CYPRUS
PALESTINE
IRAQ
PERSIA
AFGHAN-ISTAN
NEPAL
CHINA
PACIFIC OCEAN
LIBYA
EGYPT
ARABIA
Gulf of Oman
BALUCH-ISTAN
INDIA
BURMA
FORMOSA
HAINAN
ANGLO-EGYPTIAN SUDAN
Arabian Sea
Bay of Bengal
SIAM
INDO-CHINA
South China Sea
PHILIPPINE ISLANDS
GUAM
GILBERT IS.
BAKER
PALMYRA
CHRISTMAS
ABYSSINIA
ITALIAN SOMALILAND
CEYLON
FEDERATED MALAY STATES
BORNEO
CELEBES
NEW GUINEA
PAPUA
SOLOMAN IS
SAMOA IS
FIJI IS.
UGANDA
KENYA
BELGIAN CONGO
TANGANYIKA TERRITORY
ZANZIBAR
AFRICAN IS.
AMIRANTE IS.
ALDABRA
COMORO IS.
INDIAN OCEAN
NOR. RHODESIA
SO. RHODESIA
BECHUANA LAND
MOZAMBIQUE
MADAGASCAR
MAURITIUS
REUNION
RODRIGUEZ
AUSTRALIA
NEW HEBRIDES
LOYALTY IS.
UNION OF SOUTH AFRICA
TASMANIA
NEW ZEALAND
CHATHAM IS.
JOHN F. BUTLER

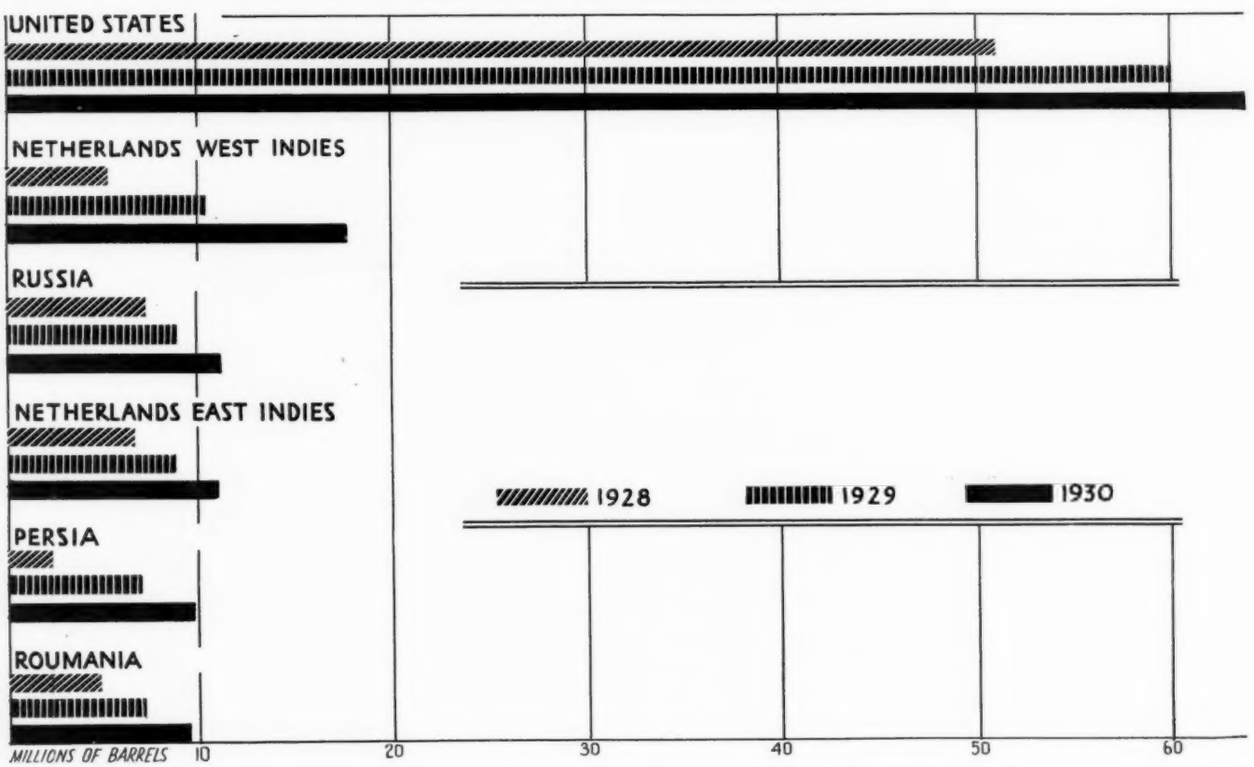
(Continued from page 25)

would shut off foreign supplies of gasoline and other manufactured products it would presumably shut off also incoming supplies of crude necessary for local production of gasoline. It is beyond doubt, however, that the building of refineries near the producing areas or in the national limits of countries which control producing areas, and even in countries not so advantageously situated, is increasing. It already has an appreciable effect on the international market for gasoline and other refined products and that influence will probably grow.

The effect of such building will vary according to circumstances. In crude oil producing countries like Venezuela and Colombia, which up to the present play no important role in refining and which for a long time are hardly likely to be heavy local consumers, the effect will be to throw large quantities of finished products on the world markets—as already occurs with the rising refining of Venezuelan oils in the Dutch West Indies. Unity of interests such as bind British and Persian oil production may have a similar result, or in case refining of crude in Great Britain is preferred may reduce the importance of the British market for oil from other parts of the world, and even increase its already sizable exports of gasoline—though Great Britain seems likely to continue, on balance, a heavy importer. Then again, in countries like France not possessed of important production under national economic or political control, the market for imported crudes may be stimulated while imports of manufactured products will be limited and probably will decline.

Finally there is to be considered the reflex action which legislation may have, not on the market in one country, but on that in all others. The best illustration of this is the change in the world market which would occur if the United States were to adopt prohibitive tariffs or an embargo on the import of refined petroleum products. In the first eight months of 1930 the United States imported 11,726,000 bbl. of gasoline—chiefly from the Caribbean—and 10,630,000 bbl. during the same period of 1931. If this market were shut off, obviously the yield outside the United States would be forced to seek other outlets and would increase the competition which American exporters meet in the world markets in which they sold in 1930 over 65,575,000 bbl. of gasoline.[1] Similarly if the United States, now one of the great importers of crude, shut off that trade the tendency would be to increase (1) local refining of crude, (2) competition on the world market by the resulting refined products, and (3) shipment of crudes to foreign refining centers other than the United States, there to compete with American exports of crude which reached 23,705,000 bbl. in 1930. Actually crude exported from the United States during the first eight months of 1931 exceeded crude exports during the same period of last year, being 17,341,000 bbl. and 16,474,000 respectively.

Gasoline Exports for Three Years by Principal Gasoline Exporting Countries of the World



How far new refining facilities will affect the international trade in gasoline it is impossible to tell; indeed the degree to which already installed equipment may do so is uncertain.[2] Gradual expansion of manufacturing facilities in many

[1] U. S. Bureau of Mines Report issued October 1, 1931.

[2] A detailed review of refinery equipment abroad is found in *World Petroleum*, July, 1931, and October, 1931.

fields, too, may have an influence on the total flow in world trade much greater than is indicated by single instances.

That this is one of the factors to be watched closely by those interested in world markets is indicated by the increase in equipment, production, and in some instances, in exports in a number of fields which have been important producers of, or markets for, gasoline.

Recent legislation in France looks toward refinery construction by nearly a dozen companies. Russia, already an important producer, is pressing the national yield forward in spite of unfavorable markets and is planning for rapid increase of refinery equipment. That which she now commands can handle only between three-fourths and four-fifths of the current yield of crude from her domestic wells.

Germany is increasing its refinery equipment with the growth of her domestic crude production, and has put a duty of $4 per barrel on foreign crude to encourage internal production.

Far Eastern countries are looking toward establishment of greater local refining facilities which are to use Sakhalin oil. It already finds a good outlet in Japan, and Russians believe may do so in China.

Australia has no local oil producing industry of importance, but imports about 6,000,000 bbl. of gasoline annually. It has already refineries which handle some 3,000,000 bbl. of imported crude—chiefly from British North Borneo and the United States. Plans to increase the refineries await only final passage of the new petroleum tariff bill admitting heavy crude duty free.[3] Here also Russian crude in future may play a more important role.

Another factor which may affect the world market for gasoline—though in the long run it seems likely only in minor degree—is the use of gasoline substitutes usually as adulterants under legislation intended to bolster up "a national industry," to make the nation to a greater degree "economically independent"—especially in wartime or to improve the balance of payments. The usual adulterant, the use of which it is proposed to encourage—is alcohol derived from by-products of the manufacture of cane sugar (Cuba, Brazil, Salvador), beet sugar (France and the countries of Eastern Europe), potatoes and cereals (Germany, Latvia, Poland, Hungary, and Czechoslovakia), and sulphite pulp (Austria, Sweden). The general acceptance that gasoline is the superior and cheaper fuel seems to assure that except as political rather than economic factors control, the use of substitutes of this nature will not assume great importance, but nevertheless places an unjustified burden on the petroleum industry and an unnecessary expense on the consumer.

It is not possible to trace with exactness the influence of each of these factors on the trade within any country or upon its imports and exports for doing so involves calculation based on multiple variables; but it is clear that they, and other factors less intimately connected with the petroleum industry, create a rapidly changing set of conditions influencing the course of international trade quite independently of the special circumstances to be met in a period of slack economic exchange.

Attempting to arrive at the probable course of development in international commerce in petroleum by shifts in its course appearing during a time of depression, also, is accompanied by a large possibility of error and no endeavor to do so in a definite manner is made in this discussion. The most that can be attempted is to show what the general course of development has been in the international shipments of petroleum in recent years, and to leave estimates of probable developments in individual areas to studies reviewing in detail local resources, industrial development, and governmental policies.

Let us turn then to a review of one of the leading branches of the international trade in petroleum products—that in gasoline, for a indication of the conditions met in the chief markets of the world in recent years as shown in the statistics of exports and imports. The details from a large number of smaller markets are not available in satisfactory form to allow an estimate of the total world movement, but the general trend may be judged by that in the chief importing and exporting nations including those in which the sales to foreign countries or purchases from them run over 1,000,000 bbl. of gasoline per year.

The ten leading exporting countries[4] in the year 1928 fell into four geographical groups. In the first was the United States, with over half of the reported international shipments of gasoline, 51,751,000 bbl. The rest of the yield of the leaders was not very unevenly divided among the other three leading producing areas. The Western European area (Russia and Roumania) exported 12,062,000 bbl,, the Asiatic group (Netherlands East Indies, Persia, and British Malaya) 11,565,000 bbl., and the Latin American group (Netherlands West Indies, Peru, Mexico, and Trinidad) 10,736,000 bbl.

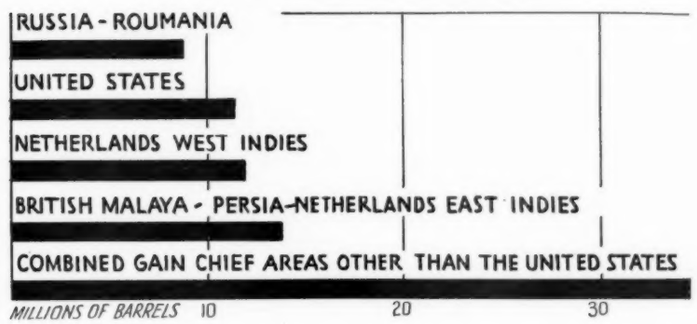
The next year, 1929, already showed a decided change. Every one of the leading gasoline exporters except Mexico increased the amount sent abroad. The United States increased its exports to 60,006,000 bbl., an increase of 8,255,000; but the Eastern European and Asiatic groups together increased their shipments by 9,855,000 bbl., about one-third of the increase coming from Europe and about two-thirds from Asia. The Latin American group showed a gain of 3,862,000 bbl.; but due to the heavy decline in Mexican shipments would have registered a loss except for the marked increase of exports from the Netherlands West Indies.

In 1930 the trend became even more pronounced. The United States showed another gain in exports, but this time only one of 5,569,000 bbl. Both the Eastern European and the Asiatic group had separately made a better showing than the United States; in fact together their shipments had increased over three

[3] New Australian petroleum tariff schedule review on page 571, *World Petroleum*, October, 1931.

[4] Great Britain is not included, although its exports were reported as 1,172,000 bbl. in 1928. The exports in 1929 were 824,000 bbl. and in 1930, 917,000 bbl. Re-exports in these latter two years are listed as 2,253,000 and 1,311,000 bbl. respectively.

Comparative Increase in International Gasoline Trade 1928 to 1930



times as much as those of the United States.

The figures for the minor contributors to gasoline exports from the Latin American area are not yet available for 1930; but the Netherlands West Indies alone increased by 7,328,000 bbl. as compared to 1929, almost equal to the increase in the Asiatic group and well above the increase from the United States.

The steady decline of the United States over the period of three years compared to the leading competitors in the export gasoline trade may be summarized as follows:

Between these years American exports of gasoline had increased 12,824,000 bbl., compared to gains for the East European group of 8,836,000 bbl., the Netherlands West Indies, 12,085,000 bbl. and the Asiatic group 13,846,000 bbl. The United States, producer of two-thirds of the annual yield of crude oil, has gained 12,824,000 bbl. in the international gasoline trade while these competitors have gained 34,767,000 bbl. In 1928 its total shipments were 51,751,000 bbl. compared to their 28,584,000 bbl., but in 1930 the United States shipped 65,575,000 bbl. while they shipped 63,351,000 bbl.

World figures for the first 11 months of 1931 are not yet available officially; but the U. S. Bureau of Mines reports exports of gasoline as being 42,550,000 bbl. compared with 61,188,000 bbl. exported for the same period of 1930. This drop of 18,638,000 bbl. will probably mean a total decline of approximately 20,000,000 bbl. in gasoline exported from the United States during the current year. (See page 24, this issue.)

Chief Gasoline Exporting Countries
(In Thousands of Barrels of 42 U. S. Gallons)

Country	1928	1929	1930
Netherlands East Indies	6,823	9,534	11,069
British Malaya	1,593	1,679	3,832
Persia	3,149	6,789	10,510
Russia	6,424	8,660	11,383
Roumania	5,638	6,820	9,515
United States	51,751	60,006	65,575
Netherlands West Indies	4,957	9,713	17,042
Peru	2,499	2,563	*
Mexico	2,156	939	*
Trinidad	1,124	1,383	*

*** No data available. Trinidad official figures restricted to "Exports of Refined Products Valued at £2,790,695 in 1930."**
Figures taken from publications of the Bureau of Foreign and Domestic Commerce, United States Department of Commerce.

With all the chief suppliers of the world gasoline market increasing their exports between 1928 and 1930, evidently the international demand has been rapidly expanding, especially when it is remembered that the local refineries in countries producing crude, and in many which do not, are also increasing their output of gasoline and, therefore, cutting down what would otherwise be a market for imported gasoline.

During the period 1928-1930, imports as reported increased in all the major markets except Cuba, Argentina, Brazil, and South Africa—agricultural regions in which the depression hit early and hard. The countries with more diversified industries proved to be more stable gasoline consumers, though non-industrial Australia and New Zealand continued to make a good showing because there, as in the United States, the automobile has won an unusual position in the national economic life.

Northern Europe continues to be—as it was at the beginning of the period under study—the prize market for gasoline in the international trade. The leaders, the United Kingdom, France, and Germany, increased their gasoline imports in the period by 17,236,000 bbl. The increase of imports was relatively most rapid in Germany, but is likely to decrease because of internal production, though the actual gain was greater in France and in the United Kingdom. The second group in European markets, Belgium, Denmark, Italy, Netherlands, Spain, Sweden, and Switzerland, increased their import purchases by slightly less than 4,000,000 bbl.—or less than 80 percent of the increase in Germany alone. The increase was greatest in Spain, least in Switzerland. Spain now is partly served by a new refinery in the Canary Islands and several refineries are planned for erection in Spain by the Spanish Oil Monopoly.

But the most unexpected development in the international gasoline trade is the increase in United States imports from 1928 to 1930 amounting to 12,728,000 bbl.; but in the first ten months of 1931 gasoline imports only aggregated 12,820,000 bbl. This item, if the position of the United States in the international gasoline market, on balance, be considered, makes the United States a country which in the years 1928-29-30 not only did not improve its position relative to that of its chief competitors, but actually fell back in amount contributed to foreign trade. On balance, exports less imports, the United States international trade in 1928 showed an excess of exports of 47,554,000 bbl. In 1930 it was 48,648,000 bbl.

Chief Gasoline Importing Countries
(In Thousands of Barrels of 42 U. S. Gallons)

Country	1928	1929	1930
Netherlands West Indies	6,413		2,067
Canada	3,208	4,363	4,843**
United States	4,198	8,834	16,927
Cuba	1,138	1,180	1,076
Argentina	2,506	2,673	2,137
Brazil	2,319	2,495	2,375
Belgium	1,442	1,680	1,939
Denmark	1,459	1,658	1,942
France	10,097	15,738	16,280
Germany	7,079	9,059	12,194
Italy	2,742	3,207	3,299
Netherlands	1,685	1,931	2,234
Spain	2,062	2,386	2,947
Sweden	1,963	2,147	2,587
Switzerland	1,006	1,190	1,350
Untd. Kingdom	21,336	23,145	27,274
Japan	1,067	1,787*	2,220*
British Malaya	2,515	2,424	4,003
Australia	5,082	5,713†	6,853†
New Zealand	1,558	1,784	1,951
South Africa	1,403	1,989	1,911

*** Unofficial. ** Canadian Government gives 1930 gasoline imports as being 163,446,548 Imperial gallons, or 4,427,044 U. S. barrels.**
† Year ending June 30..
Figures from the Bureau of Foreign and Domestic Commerce, United States Department of Commerce.

Though three years is too short a time, especially in a period that includes both a trade peak and a severe depression, to indicate definite trends in foreign trade, it is interesting to see whether the position which the United States has taken in current years is reflected in actual or relative decline of its shipments of gasoline to its chief customers. There are 14 countries which purchased in recent years over 1,000,000 bbl. of gasoline from the United States. Between 1928 and 1930 the purchases of American gasoline rose steadily in six of these in spite of the depression, it was irregular— down in 1930—in five and fell off steadily in three—Italy, Netherlands, and Sweden.

Exports of Motor Fuel from U. S. to Chief Markets
(In Thousands of Barrels of 42 U. S. Gallons)

	1928	1929	1930	Jan.-June 1930	Jan.-June 1931
Belgium	1,274	1,350	1,801	898	732
Denmark	970	1,215	1,061	604	615
France	7,726	8,737	9,330	4,982	2,874
Germany	1,318	1,768	2,254	1,137	332
Italy	1,464	1,319	1,029	603	232
Netherlands	1,884	1,849	1,584	827	903
Spain	967	1,370	1,843	1,079	866
Sweden	1,561	1,412	1,265	557	561
United Kingdom	15,636	17,517	19,208	10,549	7,702
Canada	4,409	5,225	4,281	1,816	1,445
Argentina	1,782	2,291	1,487	1,054	236
Brazil	1,254	1,435	1,188	590	490
Australia	2,751	3,403	3,009	1,657	842
New Zealand	1,219	1,251	1,518	787	560
Total	44,215	50,142	50,858	27,050	18,390

Authority: United States Bureau of Foreign and Domestic Commerce.

Under these circumstances it is evident that American exporters of gasoline will do well to watch current developments in the international trade. Many of the major American oil companies are meeting the trend by expanding their production, refining and marketing in other countries, so the law will fall more heavily on concerns whose production operations are solely domestic.

Producing Fertilizer From Natural Gas

Shell Chemical Company Completes New Ammonia Synthesis Plant in California Along Lines Successfully Developed in Holland Under Mont-Cenis Process. ***By Ludwig Rosenstein***

PRODUCTION of fixed nitrogen products, like almost every chemical industry, is today in a stage of overproduction as far as immediate demand is concerned, which means merely that a broader view than that of immediate markets must be taken if development to a commercial stage is to be made at this time. Fixed nitrogen products are essential to modern food production, and it must be recognized that the term "overproduction of foodstuffs" contains fallacious economic doctrine. Never yet in the history of the world has the production of food-stuffs over extensive regions been so great that all have been adequately fed. Today we see the depreciation of great stores of foodstuffs in granaries and warehouses while simultaneously and in adjacent regions human beings are on short rations or actually hungry. While it is true that production of food, and of fixed nitrogen, or rather potential production in the shape of installed capacity whether farmland or manufacturing plant, has outrun the immediate consumption; it is equally true that an equilibrium in this business between production. price and consumption will again be established, and that producers not within the submarginal fringe will again be able to carry on profitable operation.

In the United States' corn-belt machinery enables one man to cultivate annually about 320 acres, to plow deeper, and to cultivate more thoroughly than ever before. The problem then is, how much will be added to the productivity of this man, his machine and his land, by the addition of manufactured fertilizer.

Without attempting any deep analysis it may be simply stated that the belief of those who have embarked on this enterprise is that the continuation of mechanization of agriculture, accompanied as this must be by rising agricultural wages, will in future result in a far more extensive use of fertilizers than is at present practiced. Some comparative figures may be of interest here.

Fertilizer Consumption Per Acre Per Year in Lb. Plant Food Ingredients[1]

Holland	367
Germany	72
Japan	56
France	35
Italy	21
United States	8

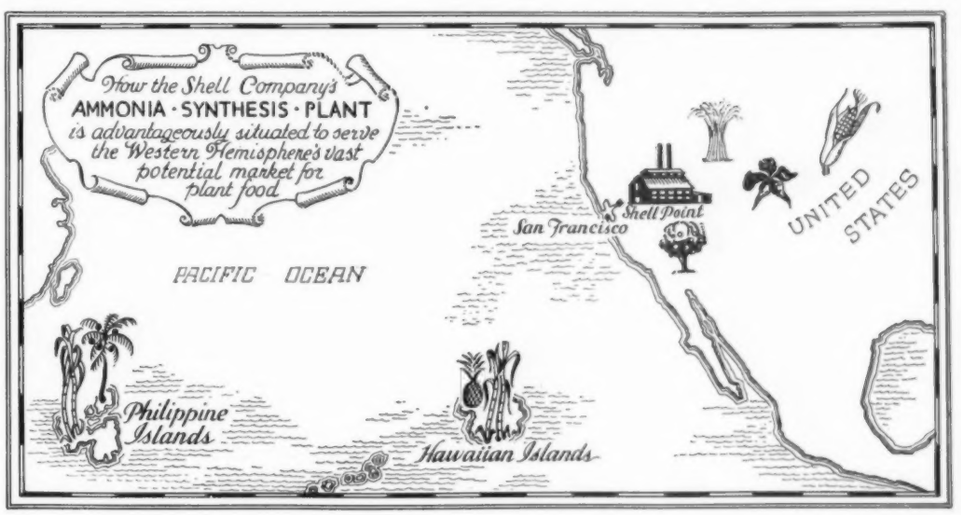
[1] Calculated from figures given for the year 1928 by U. S. D. A, Cir, 129 and Internat, Yearbook Agricult. Statistics 1928-1929.

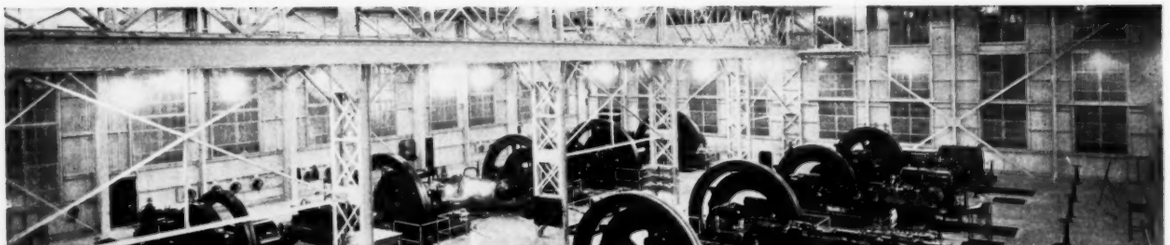
It is evident that countries where agricultural land is most limited, use the largest amount of fertilizer. That United States soils will be worked more intensively as population increases can hardly be doubted; and American fertilizer practices will then approach those of the older communities.

Ammonia synthesis by the low-pressure Mont-Cenis process has been developed to a point where production-cost of ammonia compares favorably with high-pressure processes. In any ammonia synthesis the efficiency and life of the catalyst is the point of prime importance, and largely because of the sturdy qualities of the Mont-Cenis catalyst did the Shell Chemical Company choose this procses for installation in their new plant established at Shell Point. California.

Entry of oil interests into the fertilizer business is not so altogether new; the Royal Dutch-Shell group is interested in a Mont-Cenis plant operated since 1929 by the Mekog Company at Ymuiden, Holland. The addition of the Pacific Coast unit is in a sense another step in a broad plan to establish nitrogen plants at those points most favorabe for raw material supply. California's population is growing rapidly, while arable land is strictly limited; the limitation being the water which can be made available to agriculture. These conditions must bring about increasing intensity of cultivation, and therefore an increasing demand for manufactured fertilizer. The choice of the Pacific Coast is further based on the fact that extensive areas in California, Hawaii and the Philippines which are already educated to an intensive use of nitrogen fertilizers, can be economically served; and furthermore, large quantities of gases are available for the production of hydrogen. In fact, it is the occurence of large and otherwise useless quantities of gases in parts of the world in which the Shell group has interests which was largely instrumental in turning attention to hydrogen production and synthetic ammonia. I mention the two separately, as hydrogen production is not without distinct interest of its own.

The plant at Shell Point receives, besides California air, natural gas consisting of about 85 percent methane, 12 percent ethane and 3 percent hydrocarbons. It is free of sulfur compounds and inert gases. From this raw material hydrogen and carbon are produced by a cyclic thermal decomposition, wherein a brick checker work is heated by gas





Night view of 11 synchronous motors and compressors, totaling 8,150 h.p. Motors rated from 200 h.p. three-bearing belted type to 1,000 h.p. direct connected type; Shell Chemical Company plant.

flames to about 1100 deg. C. and natural gas then passed through till the temperature sinks to about 900 deg. C. The reformed gas is scrubbed with water for the removal of tar and carbon in equipment well-known in the gas industry. It contains about 70 percent hydrogen, 5 percent carbon monoxide, 0.5 percent carbon dioxide, small amounts of acetylene, ethylene, napthalene and benzol, and a substantial amount of undecomposed methane.

The purification of this gas is a matter of considerable complexity and the equipment for accomplishing it is a very large proportion of the total equipment in the plant. Napthalene and tar are removed by oil scrubbers, carbon dioxide and benzol by water and oil scrubbing at high pressure, followed by caustic soda scrubbing to remove the last traces of carbon dioxide. The gas, after the last operation, is ready to go to a Linde gas-fractionation plant where pure hydrogen is produced by condensing everything else. Carbon monoxide is scrubbed out with liquid nitrogen, and acetylene with liquid ethylene. The final product contains hydrogen and nitrogen only. On the absence of even minute traces of impurities depends the success of the subsequent operation of bringing about the combination of the two constituents to form ammonia.

The nitrogen is produced by rectification of air in a Linde plant. Oxygen is at present discarded, but will probably find a use in the future as a chemical raw material.

The synthesis is carried out at about 400 deg. C. and at a pressure of nearly 1500 lb. The exit gas from the synthesis bomb carries about 12 percent ammonia while the returned gas contains about 1½ percent. These pressures, of course, presented difficult engineering problems which had to be worked out. Special three-stage compressors were manufactured in Europe and imported.

At the present time the ammonia produced leaves the plant either as ammonium sulfate, as liquid ammonia, or as aqua ammonia.

Production of ammonium sulfate from pure ammonia is by no means a simple matter. Where this is done by neutralization with sulfuric acid the heat evolved is very considerable and its removal must be provided for. This is accomplished by so arranging the saturators that an amount of water, corresponding to the heat of neutralization, will be evaporated. Furthermore, the crystal form of the product varies greatly with the quality of the sulfuric acid and depends also on the mode of neutralization. Under some circumstances clusters of needle-like crystals are produced which dry very poorly and pack badly even after complete drying. Under other conditions crystal granules with excellent drying properties are produced; and, of course, the aim is to maintain the latter conditions; a problem by no means simple, as the factors which influence crystal habit are not all known.

The ammonium sulfate crystals are separated from mother liquor by a continuous filter, and are then dried in a steam heated continuous rotary drier.

Liquid ammonia is produced by refrigeration of the gases coming from the catalyst chamber. The portion evaporated and made into sulfate obtains its heat of evaporation from the gases issuing from the catalyst chamber. About

Attractive homes of Shell Chemical Company employees near San Francisco, California.

one-third of the production is sold as liquid for nitric acid manufacture, while two-thirds is made into sulfate.

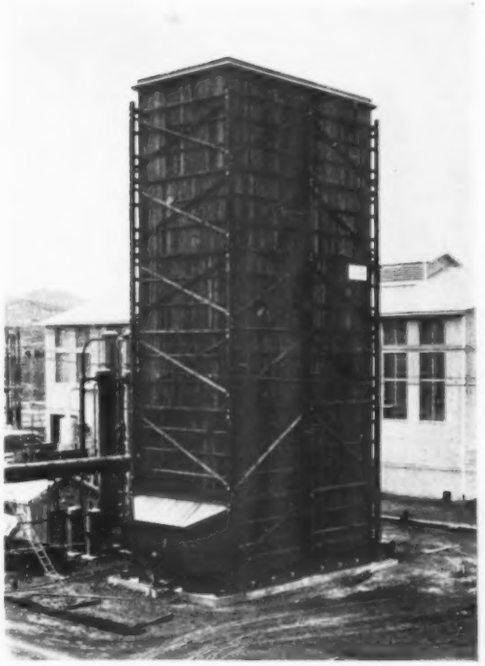
Experience has shown that the most convenient form for storing ammonia is its aqueous solution, and the plant is therefore equipped for making aqua ammonia from the anhydrous product and vice versa; storage can thus be transformed to ammonium sulfate or to anhydrous ammonia as the demand dictates. The use of aqua ammonia as a neutralizing agent in the oil industry is rapidly expanding. Because of its price and convenience in handling it is successfully replacing caustic soda for neutralization during treating and distilling. It is readily introduced into vapors having acid constituents, and corrosion thus can be greatly reduced.

The plant as it stands consists of two units having each a capacity of 30 tons fixed nitrogen daily. Besides liquid ammonia and ammonium sulfate each unit produces about 100 gal. of very pure, sulfur free, benzol, about seven tons of a very pure carbon, and a small amount of napthalene.

The location of the plant within 30 miles of San Francisco Bay was chosen only after careful consideration of many other sites both in the northern and southern part of the State. The region around Shell Point, California, is well supplied with chemical plants, and consequently with a supply of workmen and operators more or less familiar with the machines and processes involved in chemical operations. Three railroads, as well as water transport, serve this region. The supply of water for cooling and other purposes is ample; abundant natural gas is delivered by two pipe lines; there is an ample supply of low cost hydro-electric power available and last but not least in importance, the climate makes outdoor operation all the year round easy and agreeable.

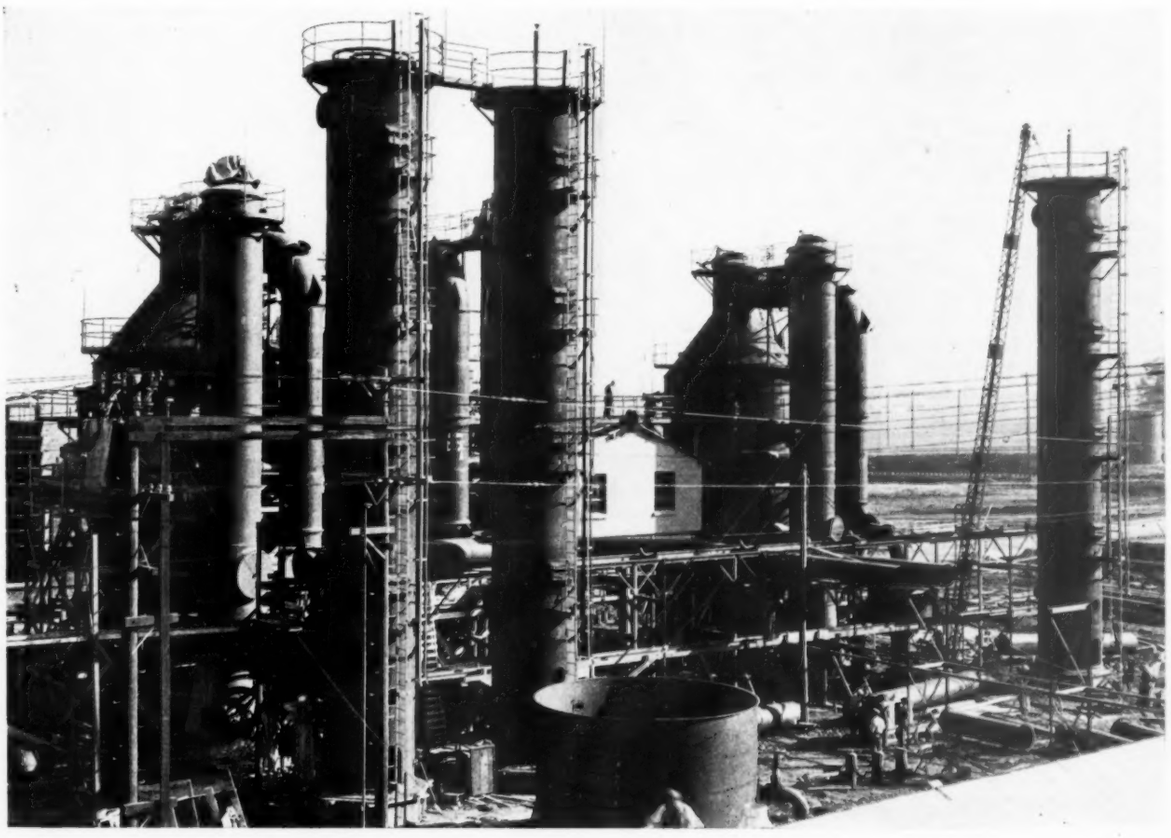
Low cost electric power is quite an important matter in the operation of the plant as there is 8,500 h.p. connected capacity. Under the circumstances it was advisable to secure a good power factor. The plant originally was designed in Holland but was re-designed by the Californian staff, and large synchronous motors of American make were adopted to obtain the desired high power factor under continuous load conditions.

Ammonium sulfate and other forms of nitrogen have in the past been brought to the Pacific Coast from eastern, inland, or European points, and it is expected that this importation will be replaced by the local product.



Forced draft cooling tower in operation at Shell Point, California.

Shell Chemical Company's natural gas reforming plant at Shell Point, California.



Menace Of Multiple Unit Taxation

Will Anti-Chain Store Legislation Which Includes Gasoline Filling Stations Prove Another Burden to the Industry Comparable to the Present Motor Fuel Tax?

GROWING antipathy toward the expansion of the chain store system in the United States has expressed itself recently in legislation in several States and promises to become an issue in practically all States within the next few years. Progress of this campaign against chains is of the greatest importance to the marketing branch of the petroleum industry as it is likely to develop into a second burden resembling the present sales tax on motor fuel. The resemblance to the motor fuel tax in its early stages is nowhere more marked than in the indifference with which the matter is now received by members of the industry who depend on agencies already in existence to check the advance of this type of taxation, or who hope to be able to win an exemption for filling stations after the law is passed. The success or failure of legislation against chain stores and company owned filling stations is to be decided in the next few years and determined opposition on the part of the petroleum industry at this time undoubtedly will prove more effective in creating public opinion against these laws and the proposed bills now before the State legislatures than any amount of opposition after the bills become established laws and the chains are taxed out of the States.

Present Status

TAXATION of chain stores is generally graduated according to the number of stores in the chain, starting at three to five dollars per store for a small chain and reaching $50 to $75 for each store when there are over 20 stores controlled by one company. In some States the amount of the tax is based on volume of sales or gross income and in other States the location of the stores as well as their number is taken into account. In Georgia a flat tax of $50 per store is levied on chains consisting of more than five stores.

At present nine States have multiple unit taxes levied against chain stores for the benefit of the inefficient independent; efficient independent retail stores neither need nor want this assistance. The most important of these State laws is the one in Indiana which has just been upheld by the United States Supreme Court. The decision of the Supreme Court will doubtless make this law a model for those of other States where difficulty has been encountered in proving the constitutionality of this type of discriminatory legislation. The Indiana law, which levies a tax of from three dollars for one store to $25 for each store over 20, is the first chain store tax law to be upheld by the Supreme Court. Filling stations are not exempt. The tax is collected by the State Tax Commission and is not dedicated to any specific use. Since it has been upheld by the United States Supreme Court which made a point of stating that its decision was not based on the desirability of the law nor the principle of this type of legislation in general, the fight is being carried into the State courts by the oil companies operating in that State. Their contention is that while the law may not be contrary to the Federal Constitution it violates provisions of the State Constitution. Those who have followed the struggle in Indiana most closely, however, feel that this belated attempt on the part of the oil companies is practically hopeless and certainly of much less value than an equal amount of effort directed earlier in the campaign when the chain store associations were fighting the law without the help of the oil companies.

Of the eight other States having anti-chain store laws, six—Alabama, Florida, Kentucky, Mississippi, North Carolina, and South Carolina—exempt filling stations and only two beside Indiana—Georgia and Virginia—include filling stations in the multiple unit tax.

Oil Companies' Attitude

THIS fact, probably as much as any other, has led to the unwillingness of the oil companies to join in any sizable, well directed campaign against the politicians, professional organizers, and inefficient retailers who are fostering sentimental and illogical laws in restraint of free competition and designed to subsidize inefficiency. Where petroleum companies with retail outlets do not feeel that chain store associations, already carrying on the battle, will succeed in defeating the law, they rely on their ability to claim an exemption on the grounds that they are already contributing heavily to the State treasury. Experience with the motor fuel tax, however, indicates that States in need of funds, depending on the inability of the voters to see the effect of such legislation on themselves, and encouraged by political consideration of the value of a campaign against "Big Business" and "Wall Street," are not likely to regard the fact that oil companies are already bearing an almost intolerable burden of taxation made heavier by the competition of those who are able to evade the motor fuel tax and those who will benefit by such discriminatory legislation as the anti-chain store tax. To depend on the fact that they are already large contributors to the support of the State is likely to prove an illusion that oil companies operating retail outlets in many of the States will regret when the State legislatures take action on some of the hundred odd chain store bills now pending.

In connection with the exemptions by which the oil companies hope to avoid the additional burden of taxation it is important to note that the Attorney General of Alabama has ruled that the provision exempting filling stations from the chain store tax is unconstitutional and Justice Roberts's opinion in the North Carolina case was that all those in the same situation, that is, operating the same number of stores should be taxed alike. The movement to include filling stations is likely to gain ground as the laws gain strength both because of the additional revenue for the State and because of the political advantages of such a movement. So far attempts to enact these laws have met with so much intelligent opposition that those interested in their passage have hesitated to encourage the opposition of the oil companies. This is obviously only a temporary reluctance which will disappear

when the laws become more strongly established.

Grounds for Opposition

OPPOSITION in general to this type of legislation is based on the fact that it is discriminatory and unjust, that it subsidizes inefficiency, is based on sentiment rather reason, and that it will result in raising the price of necessities purchased largely by a class of consumers who can least afford to pay the additional cost. Ray B. Westerfield, professor of political economy at Yale, writing on the "Rise of the Chain Store," in the December issue of *Current History*, says:

"The opposition to chain stores from those who have taken sides for one reason or another burst out in a violent anti-chain movement in 1927. As the Harvard Bureau said, 'in this development events have marched so fast that among business men bewilderment and resistance to change not infrequently have outstripped understanding'. The charges made against the chains have smacked much of ignorance, of passion born of desperation, of unfairness, of selfishness, of demagogy. It is largely a reactionary movement, against the trend of more economical methods of distribution, a rural and small town movement where local dealers and their clerks constitute the bulk of the people, where relations of dealer and customer are more intimate, and where conditions are more static and resistant to change. The attacks are based, too, largely on sentimentalities, an opposition which is powerful but will probably prove delusive in the long run. Mere appeals to the consuming public to patronize the home owned stores are ineffective and meaningless to the average consumer. The customer is at liberty to purchase where he will—the public does not owe the independent merchant a living. Gubernatorial, senatorial and other candidates for political office have found demagogic appeals against the chain store effective vote winners. Too few of the arguments against chains are based on sound principles of economics or sociology."

Discrimination in 1900

THIS campaign against chain stores resembles an attack based on the same principles directed against department stores over 30 years ago. That attack was completely killed by the decision of the Supreme Court in the case of Wyatt vs. Ashbrook in 1900 and department stores have come to be recognized as a permanent and efficient means of distributing goods. Vigorous action on the part of chain store associations and oil companies has a very good chance to succeed in discouraging in the same manner this obstacle to efficient marketing of retail goods and the high standard of service maintained at company owned filling stations.

According to Professor Westerfield:

"The independent dealer will find far better than discriminatory legislation the modernization of his store and practice and the cooperative activities represented by buying syndicates, dealer cooperatives, and wholesale-dealer cooperatives. Magnificent strides in these directions were being made by the independent dealers during the period 1927-30, when chains were growing fastest and legislation was regularly declared unconstitutional by the courts."

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Record Airlift Well

PROBABLY a record in deep airlift operation is set up by Well No. 301 of Romano-Americana S. A. (Standard Oil Co. of N. J.) at Moreni-Ghirdoveni, Roumania.

This well is 6,142 ft. deep and is producing from what is known as the Third Meotic Sand through 5,020 ft. of 4 in. tubing suspended in 8 in. casing. The production is around 1,635 bbl. of paraffinous crude, specific gravity 0.828, per day. Compressed air at about 290 lb. is supplied by three Ingersoll-Rand 11 in. x 5 in. x 10 in. type XOB-2 compressors, having a combined piston displacement of 990 cu. ft. per minute, belt-driven by three 90 hp. American-made twin-cylinder gas engines. The gas oil ratio is about 376 cu. ft. per bbl. As soon as arrangements can be made, gas will probably be substitued for air as the lifting medium, at which time it will be passed through the company's neighboring absorption plant.

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Liquid Measurement

A NEW instrument designed to avoid the difficulties and inaccuracies resulting from the steel tape system of determining the weight of petroleum and other liquids in storage tanks is being manufactured in Great Britian under license.

The new instrument is in two parts consisting of a permanent fixture on the side of each tank and a portable instrument. The latter may be used for several tanks. The process depends on balancing mercury in a U-tube by the pressure of the liquid on one side against air of a known pressure on the other.

The permanent fixture consists of a U-tube filled with mercury and protected by suitable valves, fixed to the storage tank at 10 or 12 inches above the bottom. To this may be attached an instrument consisting of a hand air pump, an air chamber with a small monometer connected through a valve to a percision manometer and from there to a connection that may be attached to the permanent fixture on the side of the storage tank.

Weight measurement of liquid is accomplished by forcing air into the air chamber, connecting the movable instrument to the permanent fixture and opening the valves. Air pressure must be regulated to balance the mercury in the U-tube, valves closed, and the air pressure necessary to balance the liquid pressure may be read with the greatest possible accuracy on the percision manometer. This reading is the only variable quantity in a formula composed of weight equals air pressure multiplied by constant of percision manometer multiplied by area of bottom. Result of this formula is a more accurate measure of the weight of the liquid in the tank than is usually obtained by the method in general use.

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S. American Oil Costs

SIMULTANEOUSLY with the renewed activity in Washington, D. C. by oil tariff proponents, the U. S. Tariff Commission has made its report to Congress on the cost of South American and domestic crude oil production and transportation. Based on the four year period, 1927-1930 cost of production in Maracaibo averaged 62 cents per barrel plus 25 cents per barrel for transportation to the Atlantic Seaboard, a total of 87 cents. In the same period domestic crude oil delivered to the Atlantic coast refiners figured out at $1.90 per barrel. But as the Commission was unable to make an investigation of the actual costs of pipe line operation in the United States and as these may vary from the actual transportation charges the quoted difference of $1.03 per barrel between domestic and South American costs may be over or understated, the report explains.

The Commission considers that domestic crude oil averages much superior in quality to imported crudes, with the result that in 1930 the gross value of refined products derived from these oils was $2.74 and $1.71 respectively. After deducting the cost of refining, the realization from a barrel of domestic crude was $2.01 compared with $1.41 from the foreign crude oil. It is further pointed out that any such adjustments between domestic and imported oil yields, and the cost of refining, are subject to variation from year to year. In 1929 and 1930 exports of petroleum and its products averaged $501,000,000 as against $142,000,000 for imports. This gives the United States petroleum trade a favorable balance of $359,000,000 yearly.

Mexican labor prefers this primitive method of calculating the day's wages based on the number of cubic feet of earth dug.

New Mexican Pipeline Rises to 8749 Feet

Rising Vertically at One Section to Cross a Mountain Range, Mexican Eagle Crude Line Is Completed After Engineering Difficulties.

By Douglas Grahame

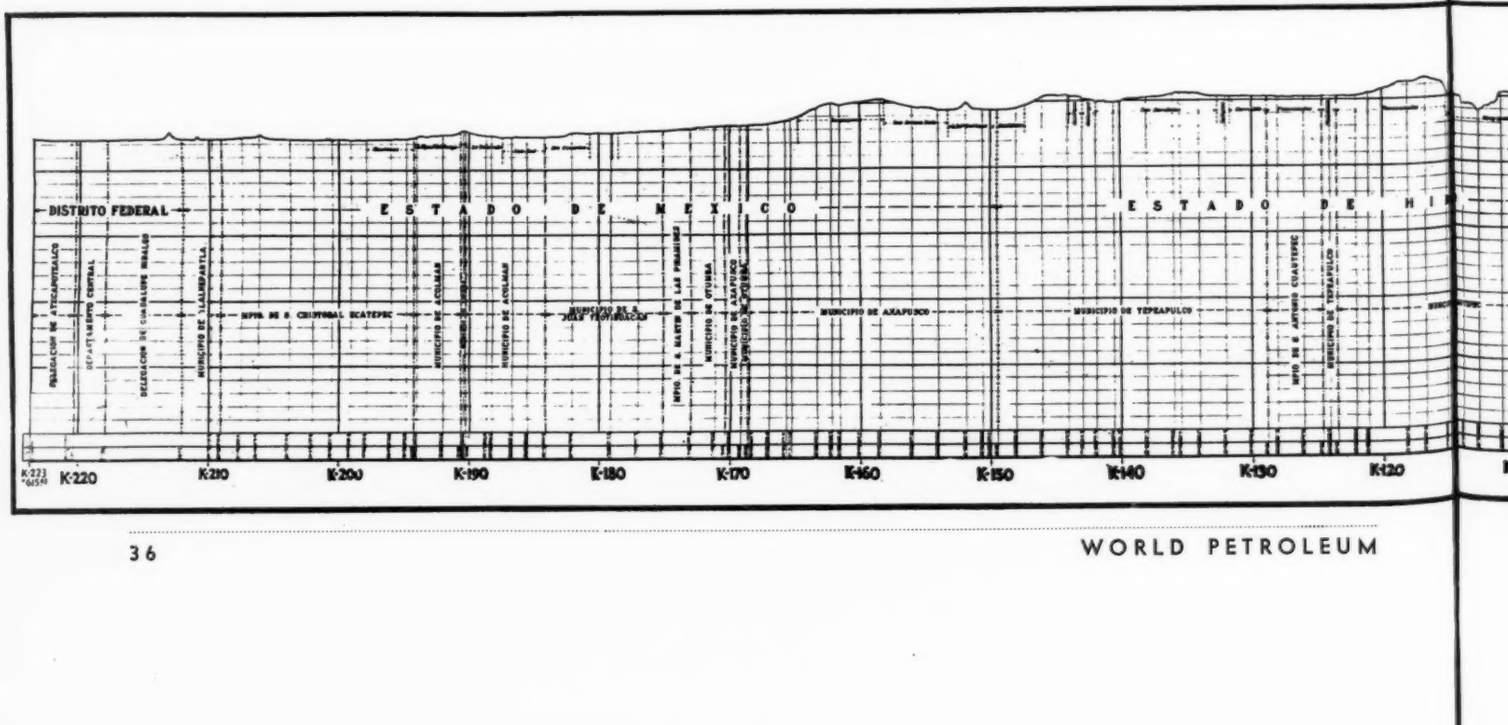
Mexican Representative, World Petroleum

MEXICO CITY.

AFTER tedious labor and the surmounting of numerous engineering and constructional difficulties, one of the most remarkable petroleum pipelines in the world has been completed in Mexico and will soon be placed in service. This work, which for the first time will bring the great Tampico production fields, into direct communication with Mexico City, is the huge pipeline of the Mexican Eagle Oil Company, of the Royal Dutch-Shell group. It was built under contract by the Martin Construction Company an American enterprise that is figuring prominently in Mexico's industrial construction program and which also carries out drilling work in Venezuela and other oil fields.

There are many longer and bigger pipelines in the world, but this work is outstanding in respect to the difficulties which the construction engineers had to face and overcome during practically all of the 223 kilometers which it traverses. Placing the pipe almost straight up in the air along the face of a towering and treacherous mountain range, through the dense and deadly insect and reptile infested tropical jungles of Vera Cruz State, were but a few of the prob-

Elevation of Mexican Eagle Company's pipeline transport from



lems met and combated that make this an interesting engineering feat.

Starting at Palma Sola, Vera Cruz State, which has an elevation above sea level of but 296 ft., the line gradually ascends until it reaches the base of the mighty mountains that constitute a barrier between the highlands of Mexico and this Republic's "tierra caliente" (hot country, or tropics). At this point, the pipeline does an extraordinary thing. It practically coverts itself into an elevator, functioning along perpendicular lines. From this place, the 10-in. welded steel pipe, made into one continuous channel of metal from terminal to terminal by acetylene welding, springs from an insignificant elevation to one of 7,850 ft. in the comparatively short distance of 120 kilometers. From the top of this staggering grade, the oil flows by gravity acros the broad Valley of Mexico to the large refinery that the Mexican Eagle Oil Company has erected at Atzcapozalco, Federal District, near Mexico City.

All of the seven pumping stations are in the first half of the line out of Palma Sola. The location of these stations is as follows:

Pump Stations of New Mexican Pipeline

Station No.	Elevation (In Feet)
1	296
2	1,550
3	2,964
4	4,637
5	5,743
6	7,179
7	8,195

All pumping is done by British made electrically-driven pumps, five by 18 inches, and driven by 100 h.p. motors. Each station has two pumps, each of which can handle 7,500 bbl. daily with a working pressure of 600 lbs. In every station is a 1,000 bbl. surge tank with floating roof, and a reserve tank, the capacity of which corresponds to the contents of the tank in the next higher station. All stations are equipped with an opening 10-in. check valve and a flow meter, as no guaging takes place on the entire line.

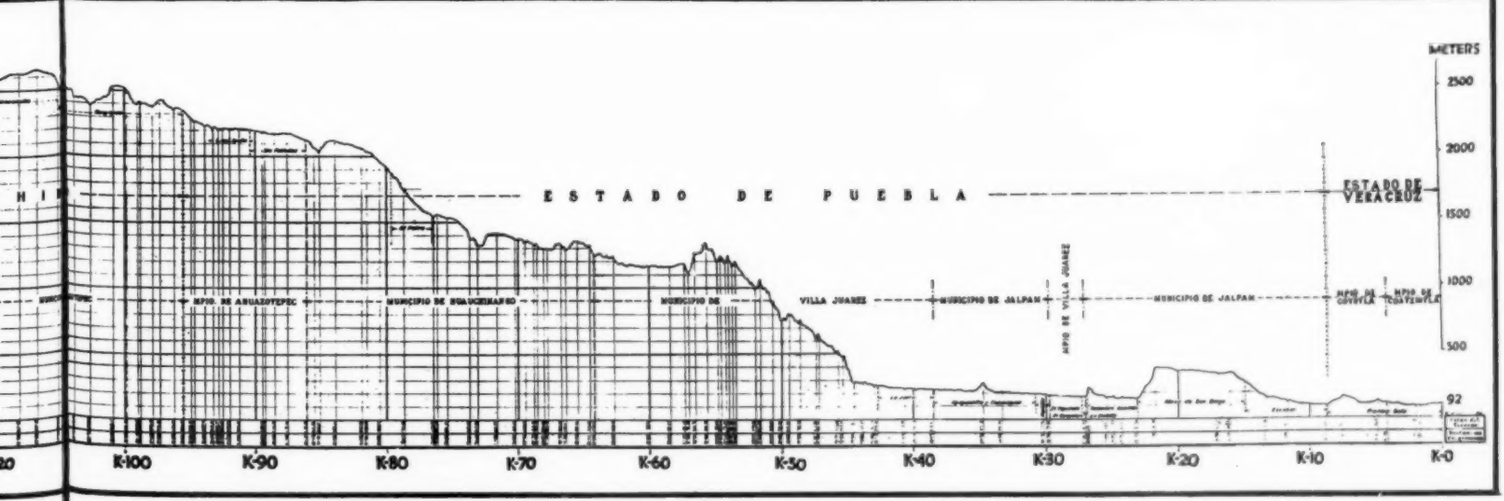
Electric current is supplied by the power station of the Mexican Light and Power Company, Ltd., a Canadian-owned enterprise, at Nexaca, a short distance from the greatest height the pipeline atttains. From that location to the Atzcapozalco refinery, the power company's lines are used; but the petroleum company has its own double high-tension power lines from the top of the high mountains to Palma Sola. Each pumping station has two transformers. A complete double circuit telephone system has been installed along the line.

Housing facilities for the engineering staff and workers are afforded at each pumping station in buildings made of adobe or stone. The electrical engineer and superintendent in charge of the line make their headquarters at Station No. 5, Catalina, Puebla State. Welding apparatus and spare parts are stored at each pumping station, as repair work is extremely difficult during the rainy season from May to September, excepting on the stretch from Station No. 6 to Mexico City. Other parts of the line can be negotiated only on horseback.

Considerable rock had to be removed or chanelled during the construction, and for this much power was necessary. Those in charge of the construction were amused by the manner in which the Indian laborers adhered to their age-old custom of making conical mounds of the

Overcoming tremendous difficulties in transportation and communication was part of the day's work in constructing Mexican Eagle pipeline.

transporte from Tampico to Mexico City refinery.

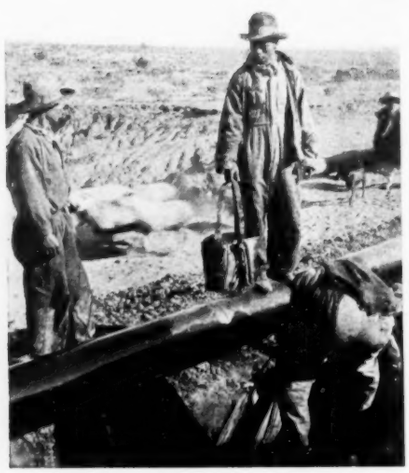


Native labor welding the remarkable pipeline which will supply the Mexican Eagle Refinery at Mexico City.

earth they excavated as can be seen in one of the accompanying illustrations. This is their system of computing how much is coming to them for the day's efforts. They prefer this method, although it means more work for them, to that of the measurements of cubic meters of earth excavated as calculated by the engineers and crew bosses.

With the exception of some engineers and other technicians, very few foreigners were employed on this job. The line was almost entirely built by Mexicans. When the construction was started, Mexicans were taught to weld. They learned this lesson so quickly and so thoroughly that within two months they were welding from 12 to 14 joints of 10-in. pipe per man per day. All the welds stood a test of 800 lb. cold-water pressure, which was remarkable, considering the contour of the terrain over which the line was laid.

Painting the pipeline.



The location and establishment of the pumping stations and transportation, especially in the mountainous regions and in the jungle lowlands, were among the greatest problems and difficulties of the undertaking. In this phase of the work, ancient and modern transportation modes were called into service, in the employment of powerful tractors, motor trucks, mules, oxen, and man power. Another great difficulty was the movement of materials, and the long hauls of water to keep the acetylene generators working. Besides this, when the lowlands of the Valley of Mexico were reached, it was during the rainy season. This caused considerable sickness. The contractors estimate that at least 20 percent of their total employees were on the sick list. Several men were drowned in the rivers when they were caught by quick overflows.

Surveys for the route of the line were made by the Mexican Petroleum Company's engineers under the direction of Pietro Maino, and calculations and all technical phases were handled by the company's Engineer, Cayetayno Romero. L. Szily was the construction manager for the company. Martin Construction Company officials in charge of the work were Wiley P. Breeding and S. D. Baker in charge of the pipeline, and A. W. Naylor in charge of the pumping stations. The largest number of men working at any one time was 2,200. The entire work, including the pumping stations, represents an investment of 5,000,000 pesos (approximately $2,400,000, U. S.).

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New Pump System

A NEW deep pump method of production of crude oil from wells without pipes has been tested at Baku during the past three months. The method is reported to be successful. Of the 17 wells where the new system was tested three wells produced more crude than formerly when using casing pipe.

A new lubeoil treating plant is to be erected at Batum which will be the largest of its kind in the world. The lubeoil will be specially refined for the use of motors and tractors and will be a derivative of fuel oil. The capacity of the treating plant will be 12,000 bbl. per day. Today's largest lubeoil treating plant is at Port Arthur having a capacity of 6,000 bbl. per day.

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THE Ministry de Fomento of the Venezuelan Government estimates that the total production of crude oil for 1931 in Venezuela will not exceed 125,000,000 bbl. compared with 141,652,852 bbl. in 1930 and 138,914,552 in 1929.

Influence of Engine Design on Refining

How the Needs of Automobile Motors are Dictating the Designs of Refinery Equipment is Told by Dr. Gustav Egloff of the Universal Oil Products Company.

THE tendency in the development of refining processes and in the installation of refinery equipment today is dominated by just two things. These are the requirements of the modern motor car for fuel and lubrication.

Power and speed, which are being built into the new cars in ever increasing degree, are steadily making the cars more exacting as to quality of gasoline and lubricating oils required. In order to develop additional power and speed, automobile engineers generally have increased the compression pressures of their engines.

Increasing compression pressures means increasing tendency of the engine to knock, and, therefore, efforts of refiners are directed more and more toward producing motor fuels of the highest possible anti-knock value. At the same time, the growing tendency of motorists to drive their cars at continued high speed for long distances has increased the average operating temperature of motor cars, and consequently has put increasingly heavy duty on the lubricating oil.

It is well known that cracked gasoline, generally speaking, has a much higher anti-knock value than straight-run and consequently the ratio of cracked gasoline to straight-run has been increasing steadily and substantially for several years. So insistent has the demand for cracked gasoline become that to a considerable extent today straight-run gasoline itself is being cracked to improve its anti-knock value and then blended back with the gasoline obtained by cracking the topped crude.

A still more recent development is the cracking of *crude oil direct*, whether of high or low gasoline content, eliminating the skimming step altogether, and producing direct from the cracking unit a finished gasoline of high volatility and a knock value equal to and in some cases better than Ethyl standard. This method of cracking crude oil has been found to produce the highest yield of gasoline obtainable by any method commensurate with highest possible anti-knock value.

The tendency among refiners then, in so far as the gasoline-producing side of their plants is concerned, is to install the most efficient cracking apparatus obtainable to increase their output and reduce to the lowest possible point the production of straight-run gasoline.

Under the stimulus of the automobile's exacting demand, striking advances have been made in the quality of lubricating oils being marketed. The tendency in the industry, which is growing more important, is the production of low cold test oils. This calls for lower temperatures of refrigeration and wax removal, some equipment going as low as—60 degs. F. Centrifugal action for the removal of wax is still the dominant process, while the use of filtering, sulphur dioxide, and other solvent for dewaxing and refining, is increasing in the production of commercial lubricating oils. The combination of centrifugal action with filtering is being tested out on a large scale.

A chemical process has gone into commercial use, wherein selected cracking stocks are subjected to elevated temperatures in order to produce highly unsaturated distillates. Certain fractions containing a high olifin content are then treated with aluminum chloride for a number of hours at relatively low temperature for the purpose of polymerizing the unsaturated hydrocarbons. The polymerized product is further refined and steam or vacuum-distilled. The lubricating oils are wax-free and show a low Conradson carbon test, a flat viscosity temperature curve, and a low oxidation sludging test. They have been used as shock-absorber, gear transmis,-sion. free-wheeling and airplane oils.

It is reported that lubricating oils are being produced by the hydrogenation of low-grade lubricating oil fractions. This operation takes place at elevated temperatures, and under pressures of about 3,000 lb. per square inch, in the presence of catalysts. The quality of lubricating oils from hydrogenation is said to be excellent.

There is a tremendous activity in endeavoring to produce synthetic lubricating oils by various methods that have not only specific properties for certain uses, but show little break-down under the high temperature conditions prevailing in an automotive engine.

The vacuum distillation of lubricating oils, particularly by the use of pipe stills, to produce overhead lubricating oils is increasing.

It is well known that organic substances, subjected to elevated temperature, decompose readily when distilled at atmospheric pressure. However, under conditions of vacuum distillation, which means reduced temperature of distillation, decomposition is practically zero.

Vacuum stills are in commercial operation, using as low as 5 mm. pressure. In some vacuum units steam is injected into the pipe still, which has a refining or clarifying effect on the overhead distillates. Lubricating oils from vacuum units are lighter in color than those derived from atmospheric distillation, despite the use of a large amount of steam.

A vast amount of work is going on in an attempt to cut down gasoline losses in storage or transportation. This is reflected in vapor recovery systems and stabilizers, and by gas-tight tank roofs, floating roofs and spherical tanks which will withstand 75 lb. pressure, more or less. It is also reflected in the installation of aluminum storage tanks and aluminum gasoline transporting trucks or tank cars.

An ever-increasing number of stabilizers are being installed, particularly for cracked gasoline. The process for control of vapor pressure of gasoline is an important item in its sales, and a proper stabilizer can control the quantities of butane present to an exact percentage satisfactory for the use of the gasoline during any part of the consuming year.

The elimination of batch-agitators for the treatment of gasolines is rapidly going on and these are being replaced by continuous treaters. Considerable advance has been made in the treating of light oils by means of various chemical reagents, in either liquid or vapor phase.

The refiner of crude oil is more than ever on the alert to utilize and experiment with new developments for the production of light oils, lubricating oils, waxes, fuel oil, asphalt and by-products.

The Motor Fuel of 1942

Continuation of Gasoline as the Principal Motor Fuel in Preference to Diesel Oil Foreseen by A. Ludlow Clayden, Chief Technologist of The Sun Oil Company.

IN the following article dealing with the future trend in the manufacture of motor fuel the author maintains that while details of automobile and gasoline manufacture may differ greatly ten years hence, engine and fuel types will remain fundamentally the same as today. Diesel engines for light land transportation will not have advanced in that time to a point where they will offer serious competition to the present internal combustion engine with the modifications that a decade may bring. This article, with its interesting predictions, will be reprinted ten years hence in the January, 1942, issue of World Petroleum.

IN spite of the difficulties and uncertainties involved in attempting to predict the future trend of automotive engineering and its effect on motor fuel requirements, I have no hesitation in saying that neither the motor fuel nor the engine of ten years hence is going to be fundamentally different from those in use today. The fuel of 1942 will still be gasoline; the engine of 1942 will still be a gasoline engine.

Gasoline originally was chosen as a fuel because it was readily convertible into gas which could then easily be ignited and burned in an internal combustion engine. The internal combustion engine was chosen because it developed the greatest power in proportion to weight, size and cost. Nothing has occurred in the last 30 years to affect this status. Nothing can possibly happen which can be brought to the stage of practical development and then reach general adoption within another 10 years. The individual vehicle of the far future may very likely be propelled by radio activity of some sort; but for the next 20 years it is unlikely that even flying, much as we know it today, will to any great extent replace the motor car in populated districts. Nevertheless, the car of 1942 and its fuel are both likely to differ a great deal in detail.

What are the strongest forces at present inciting engineers and petroleum technologists towards something new and better? Taking the former first, for the former really controls the latter, we can see in the automobile industry a tougher struggle for the survival of the fittest than anything we have seen thus far. The public demands, always has demanded, and probably will continue to demand three principal things of an automobile, namely, comfort and ease in riding and driving, the ability to maintain a high average speed without consciousness of effort, and the lowest possible first cost. The public thus far has shown not the faintest interest in operating or maintenance costs, and if the past couple of years have not aroused such interest it is inconceivable that anything could happen in the next 10 to do so. More and more the power from an ever lighter, cheaper motor is the engineer's vision, and the degree of realization he may hope for depends largely if not mainly upon how able an ally the petroleum technologist proves to be.

A gasoline engine reduced to its fundamentals is a pressure operating through a distance at a speed. The higher the pressure, the greater the distance and the higher the speed the more is the power. Hence high pressure combustion and high moving part velocity are essential, and what was high a year or two ago is low today.

Let us forget the fuel side of it for a moment and look at some other limitations. The object of increasing the piston speed—usually by revolutions of crankshaft—is to enable a motor of given dimensions to "pump" a larger volume of gas, in a given time. Speed in engines as we know them is limited mainly by the design and the lubrication of bearings. New materials for shafts, for bushings, and for lubricants will probably raise the safe speed of relative movement of engine parts to at least twice the present velocities. Meanwhile improved valving or supercharging, or both, will permit at least an equal volumetric pumping efficiency. Supposing gasoline stays unchanged for 10 years and all the development is done on the engine we might still reasonably expect almost double the present power from a given mass of metal.

What part can be taken by the oil industry? Means for increasing the working pressures is the obvious answer, for while the engine designer can deal with speed, pressure he cannot change without the help of improved fuels. Speed of action remains a major factor.

Effectively to assist the engineer the fuel producer should provide a gasoline which can be converted more easily and more swiftly from the liquid to the combustible gaseous state, which can be burned with less thermal loss, and which can be so utilized as to produce much higher pressure during its brief combustion.

There is just now a distinct wave of interest in Diesel engines for automotive purposes. Quite how this came about is difficult to determine, but it most assuredly was in no way started or sponsored by any branch of automotive engineering. The Diesel engine has very properly displaced steam engines in many fields; fields where operating cost is of first importance, but its scope as a prime mover in competition with steam is now pretty well set, and it has its definite field.

In automobile fields cheapness of power is scarcely even a secondary consideration; the force which enabled the Diesel to displace the steam engine during the past 20 years in so many places is not operative in the motor car market. Here we have as main objectives the obtaining of maximum power from minimum weight and cost of engine.

Suppose for a moment that the automobile had developed along heavy oil engine lines; that the gasoline motor had but recently been discovered, and that the gasoline engine had developed purely as an aviation power unit. Then a comparison of the advantages of that type of engine and fuel with the heavy oil types would inevitably have at-

tracted automotive engineers because it would have shown them a means for increasing power while reducing weight and cost. The success of an automobile engine is based largely upon the speed at which it will operate. The limitations upon speed have been and still are structural materials and lubrication, but there is no difficulty today in manufacturing engines to run at 4,000 r.p.m., and to give much better durability than engines of a few years ago running at half that speed. The more nearly our fuel approaches a gas the more rapidly can the combustible mixture with air be formed, and the gas cycle of the automobile motor is capable of being performed much faster than the limits now set by mechanical matters. In carrying the development of the gasoline engine further the engineer asks little of the fuel as a type. Perhaps a good deal higher detonation quality may be wanted, perhaps higher speeds may call for reduced end points, but motor gasoline is already growing towards aviation types and to provide such changes involves no new discoveries.

This does not mean that small engines using other forms of fuel do not have their fields. Gasoline is and must be always to some extent a fire hazard. Any fuel that liberates combustible gas at atmospheric temperature is undesirable in some circumstances. Automotively this means that non-volatile fuel is desirable for aviation and for boats, to which may be added that because the specific fuel consumption is much higher in these fields there is some incentive to consider the thermal efficiency of the engine while there is little or none in the case of the automobile.

When dealing with petroleum products it is of course futile to talk about dearer or cheaper fuels. The price of any extract form or product of crude oil is determined absolutely by the relative demands for all petroleum products; in fact in the light of present knowledge of heavy oil engines of small size there is every reason to believe that the manufacture of a suitable fuel would involve more labor and more energy than the manufacture of high grade gasoline.

There is another aspect of the case which is seldom spoken of, and yet this may be portentous. It is only within the last three years that automobile engineers in general have come to realize that they can voice a demand for two things. First, for changes in the characteristics of motor fuels; second, for a better standardization of motor fuel characteristics.

Hitherto, they have always worked with a tacit assumption that they had to design for the poorest qualities of fuel; but now engines are being built by hundreds of thousands which will not operate to really good advantage on gasoline of even average quality. Public willingness to accept the premium type of gasoline has led to its widespread use. The next stage on which we are already far advanced is for the average fuel to move up into the premium class, so pushing the latter forward once more. While of course this sort of progress is not limitless, we certainly have not yet reached the ultimate end. The oil industry told the automobile engineer that he could have new fuels if he wanted them and the offer has been accepted enthusiastically. This has established a precedent of cooperative effort. Maybe the engineers will overdo it, maybe they will ask for more than can be done, but even so there has been established a faith in the ability of the petroleum industry that has completely done away with the previous attitude of suspicion and mistrust.

So it is safe to prophesy that the motor fuel of 1942 will still be gasoline, although meanwhile the heavy oil engine of moderate size will assuredly develop; for airplanes for boats and thence—possibly—for very large road vehicles. This may mean the development of types of fuel as yet unknown. We have learned a little about the detonation quality of gasoline; we have a similar and as yet unscratched problem in the phenomenon of ignition lag in Diesel fuels. Here is the great difference. The gasoline engine designer does know what he wants and why he wants it and how to use it when he gets it. The position of the heavy oil engineer, on the other hand, is very vague. Similarly, the petroleum technologist has pretty definite ideas of how to go about filling the requirements of the gasoline engine and scarcely any as to the proper procedure in the other case.

Everything points to a continued development of gasoline and gasoline engines on a large scale, accompanied by a slower development of Diesel motors on a smaller scale. Ten years hence we may know half as much about small heavy oil engines and their fuels as we now know about gasoline engines and gasoline. If the technical men of the allied indutries can get that far in a decade they will have accomplished much.

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Oil and Gas for Electric Generation

THE Geological Survey Division of the Department of the Interior of the United States, regularly compiles and issues figures on production of electricity for the various States of the Union together with figures on the various kinds of fuel and water power used.

The accompanying table gives consumption of fuel oil and natural gas in the United States for the months of August, September, and October, 1931, and fuel oil for November, 1931.

Consumption of Oil and Natural Gas by Electric Public-Utility Power Plant

(In U. S. Barrels and Thousands of Cubic Feet)

	FUEL OIL				NATURAL GAS			
	August	September	October	1931 November	August	September	October	
New England	145,340	124,506	139,213	129,909	0	0	0	
Middle Atlantic	31,823	34,348	31,838	31,827	5,947	6,577	6,443	
East North Central	12,027	11,475	18,375	24,797	285,652	276,587	959,320	
West North Central	78,970	83,307	75,673	76,956	1,277,805	1,628,226	1,553,808	
South Atlantic	168,108	174,917	175,800	177,282	7,143	6,953	595,258	
East South Central	6,475	8,153	10,146	10,236	304,424	345,601	377,195	
West South Central	38,457	40,918	49,543	42,617	6,238,655	5,974,385	5,824,094	
Mountain	46,065	47,256	24,040	24,635	133,044	144,358	168,387	
Pacific	198,429	166,225	177,238	200,623	4,289,744	5,413,578	5,713,243	
United States total	725,694	691,105	701,866	718,882	12,542,414	13,796,265	15,197,748	

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Almas Fuzito Works of Vacuum Oil Company, R.T. Budapest.

Foreign Oil Legion

ROBERT F. HAND, vice-president and assistant general manager of the Standard Shipping Company, New York, author of the interesting article on the operation of Jersey Standard's world-wide fleet in the November issue of WORLD PETROLEUM, has been honored with the Royal Order of Commendatore della Corona d'Italia-Knight Commander of the Order of the Crown of Italy by King Victor Emmanuel at the recommendation of Premier Mussolini.

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M. F. BLACKMAN, general personnel director of the Pan American Petroleum and Transport Company of New York, has been visiting the company's oil properties in Venezuela.

▼

J. A. JAMESON, a director of several Anglo-Persian subsidiaries, is in Persia on a visit of inspection, accompanied by A. N. Baylis, the Anglo-Persian Chief-engineer in Persia, and T. MacDonald, of the company's head office staff.

▼

GORDON H. MICHLER, managing director, Cie. Standard Franco-Americaine, returned to France shortly after Christmas following a three week's visit to New York.

▼

P. M. FOWLIE, president of the Shell Company of Canada, has been visiting England in connection with the construction of a new refinery in Canada.

▼

FRANK C. LAURIE, vice-president and general manager, Lago Petroleum Corporation, is back in Maracaibo, Venezuela, following his vacation in the United States.

▼

S. G. MACFARLANE, assistant secretary of the Australian Commonwealth Treasury, has been appointed by Prime Minister Scullin a director of the Commonwealth Oil Refineries in place of Sir Nicholas Lockyer, resigned.

J. W. CASTERTON, purchasing agent of the Standard Oil Company of New Jersey, and coordinator of purchases for subsidiaries of Standard Oil Company (N. J.), has been elected to the board of the Delaware company.

Prior to his appointment as purchasing agent of the Jersey Company in 1921, Mr. Casterton was purchasing agent for the Imperial Oil, Ltd., at Toronto.

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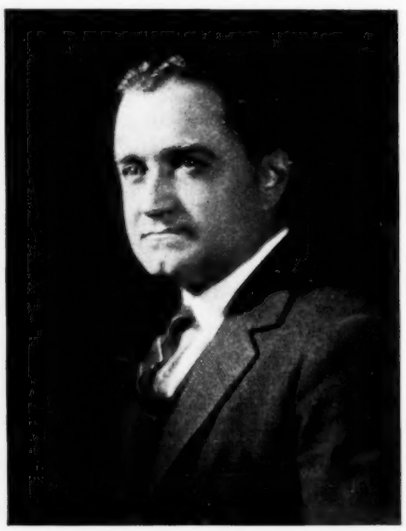

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Valentin R. Garfias, manager of the Foreign Department of the Cities Service Company, who has just returned from a business trip to the oil fields of Mexico.

R. G. STEWART, president of the Pan-American Oil Company, returned from Germany where the Pan-American has recently purchased Nitag, a German distributing company, to New York on the BREMEN.

▼

CLARENCE OCHS, production superintendent, British Controlled Oilfields, Ltd., El Mene, Venezuela is on vacation in the United States.

H. A. RIEDEMANN, director of the Standard Oil Company of New Jersey, sailed for Europe on the BREMEN, December 6, in company with J. P. Hughes, director of the Romano-Americana, Roumanian subsidiary of the Standard of New Jersey.

▼

PETER M. SPEER, chief legal adviser, and Arthur T. Roberts, assistant treasurer, of the Standard Oil Company of New York sailed for Europe on the BREMEN.

▼

A. T. BEAZLEY, general manager, Anglo-Ecuadorian Oilfields, Ltd., recently returned to London following a visit to his company's oil fields in Ecuador.

▼

D. CADDEL, field superintendent of the Venezuela Gulf Oil Company's operations at Lagunillas, is back in Venezuela following a vacation in the United States.

▼

J. SKLIROS has been appointed general manager of the Iraq Petroleum Company, in which capacity he has been acting for some time.

▼

WILSON CROSS, managing director of the Vacuum Oil Company of London, who has been visiting the United States has now returned to England.

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G. W. COVELL, drilling superintendent, Anglo-Persian Oil Company has been visiting various United States oil fields, including California and the Mid-Continent, studying equipment and practices, and at the time of writing is en route from California to New York.

▼

CLIFF CROFT, formerly production superintendent of the Lago Petroleum Company of La Salina, Venezuela, and who for the last two years has been in the Mid-Continent oilfields of the United States is again located at La Salina.

▼

W. E. ENGLISH has returned to England after six years' service as chief chemist at the Egyptian Government's petroleum refinery at Suez. His place has been taken by an Egyptian, under the Government's new policy.

UNITED STATES

	Daily Production bbl.	Daily Runs to Stills bbl.	Gasoline Stocks bbl.	IMPORTS FOR WEEK Total bbl.	IMPORTS FOR WEEK Gasoline bbl.
Ending Nov. 28	2,420,100 387,950*	2,292,600	33,685,000	1,153,000	114,000
Ending Dec. 5	2,449,850 402,200*	2,213,400	34,256,000	1,432,000	294,000
Ending Dec. 12	2,456,650 410,900*	2,270,000	34,826,000	1,737,000	165,000
Ending Dec. 19	2,430,300 387,050*	2,317,000	35,936,000	1,046,000	94,000
Ending Dec. 26	2,292,900 316,000*	2,238,000	37,199,000	1,314,000	189,000

Lined figures indicate improvement in statistical position — decrease in production, runs to stills, gasoline stocks or imports.
Production of the Rusk-Gregg field, East Texas.

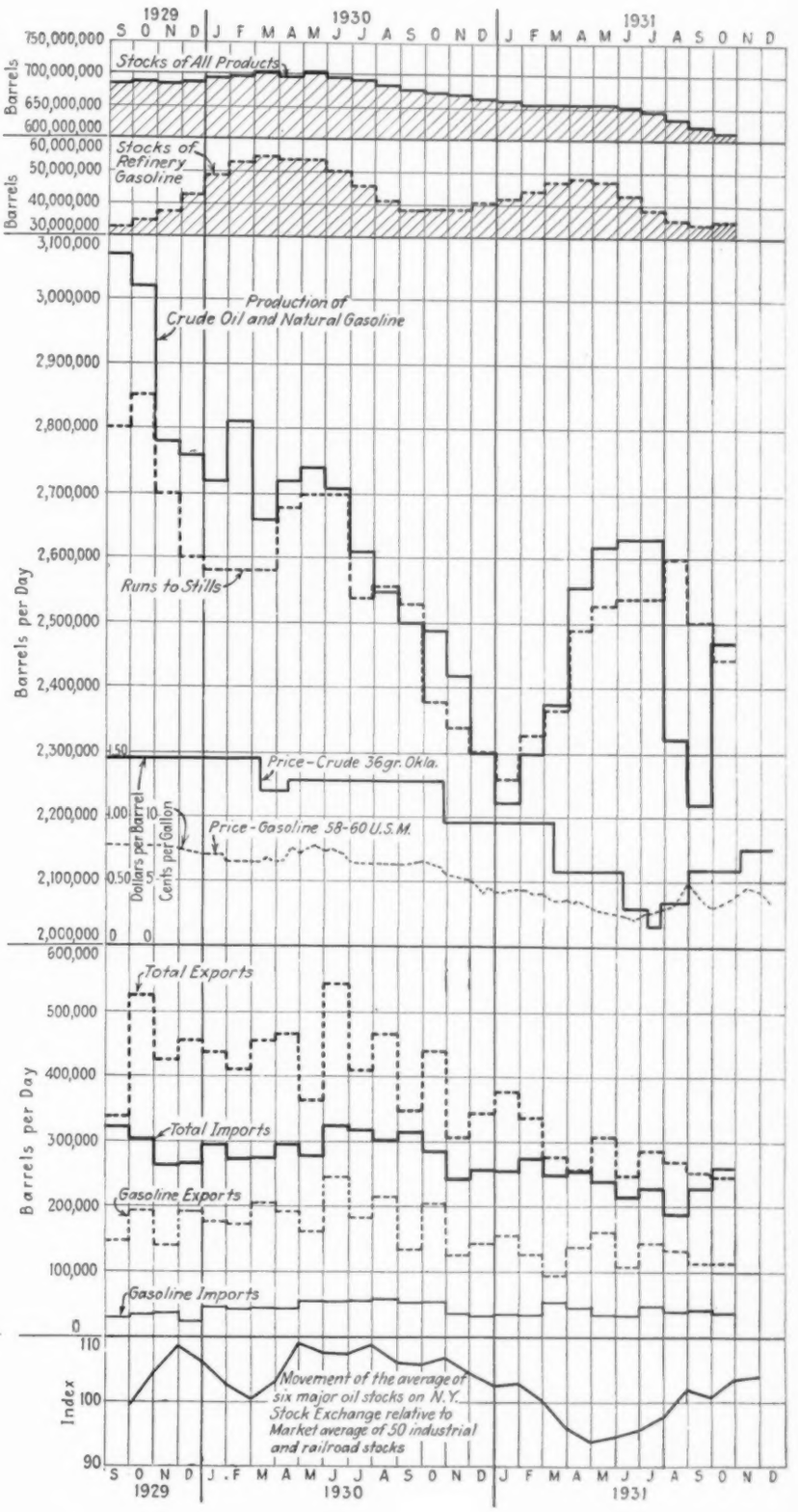
Necessity for Action

AMOS L. BEATY, president of the American Petroleum Institute, issued a brief, but caustic statement on the necessity for immediate action to save the petroleum industry in this country from demoralization in the near future. High points of Mr. Beaty's speech were his rejection of optimistic and lulling statements to which all industries have become accustomed since the begining of the current depression and his recognition of the fact that nothing so simple as a tariff is going to solve the fundamental deficiencies of the present crisis in the petroleum industry. Mr. Beaty admits that a tariff might be helpful in solving immediate difficulties at some expense to foreign business, but will not be sufficient to correct conditions responsible for extremely low prices. Such conditions are; crude production 20 percent too high and runs to stills 20 percent too high in the face of decreasing consumption.

Prices—Mid-December

REFINERY gasoline prices began declining in Mid-November influenced by seasonal decrease in consumption, and also by particularly inclement weather. The prices declined gently till December 1, reaching 4¼-4¾ cents per gallon for 58-60 U. S. M. in Group 3 (Oklahoma) market, but since December, the decline has been very rapid, the quotations falling to as low as 2¾-3¼ cents per gallon, indicating a decline of 40 percent since November 15. Gulf Coast prices for export stiffened slightly since Mid-November, 58-60 U. S. M. being quoted at 4¾ cents per gallon, an increase of ¼ of a cent.

Natural gasolines reflected the decline in the motor fuel, grade AA in Group 3 (Oklahoma) market declining from 4⅜-4½ cents per gallon in Mid-November to 2⅜-2½ cents per gallon by December 15, the market being over-saturated.



Crude oil prices officially remained steady in the Mid-Continent area. Precipitate decline in motor fuel and reduced runs to stills, with consequent addition to storage of some 140,000 bbl. per day in Texas, Oklahoma and Kansas, have however, weakened the crude oil price structure considerably. As a matter of fact the desire of oil companies to have their inventories for 1931 closed at higher crude oil prices has been probably the primary reason for maintaining the current quotations. A decline of 20 cents per barrel has been freely predicted in some quarters to take place early in January, 1932.

It is probable, however, that existing crude oil prices will be maintained throughout the winter. Oklahoma and Kansas operators are planning to reduce their production by at least 10 percent, allowing 490,000 bbl. to Oklahoma and 100,000 bbl. to Kansas. In California it is planned to reduce production from 500,000 to 460,000 bbl. per day. Texas alone is holding its production at an abnormally high level—around 1,000,000 bbl. per day; its share of the country's markets certainly not warranting more than 750,000 bbl. Texas excluded, there are definite signs of willing cooperation among producers, and it is very probable that there will be no large addition to crude oil stocks during the coming winter.

Runs to stills continue to be excessive by a considerable margin, and should be reduced for several months to at least 2,200,000 bbl. per day from the current runs of about 2,400,000 bbl.

Drilling

EAST of the Rocky Mountains no fewer than 1,068 oil wells were completed during the month of December, and about 2,693 drilling operations were underway at the close of the year.

Pipe Line Construction

PRELIMINARY surveys of new pipe lines constructed and building in the United States during 1931 indicate that a total of 16,468 miles has been laid down at a cost of $426,700,000. Of this total 7,476 miles of large diameter lines have been built for natural gas transportation at a cost of $314,000,000, and 3,750 miles were constructed for gasoline transport costing about $40,000,000.

Construction will continue at a rapid pace in 1932; current plans indicating at least $150.000,000 of new work. The more important projects include: (1) Natural Gas Corporation of America will probably parallel its existing 24 in. line from Texas Panhandle to Chicago; (2) Continental Construction Company is planning a new natural gas line from Texas Panhandle to Buffalo, N. Y., to run through Oklahoma, Kansas, Nebraska, Iowa, Illinois and Ohio; (3) Ajax Pipe Line Company will increase the capacity of its line from Klennpool, near Tulsa, to Wood River, Illinois, from 65,000 bbl. per day to about 100,000 bbl.; the Illinois Pipe Line Company is similarly increasing its capacity from Wood River to Pittsburgh, Pa.; (4) Great Lakes Pipe Line Company, a gasoline carrier, will add new extensions to its line originating in Oklahoma and now serving Chicago, Omaha and Minneapolis; (5) Texas-Empire Pipe Line Company is considering an extension of its Seminole-Tulsa-Chicago pipe line to the East Texas field.

In addition shorter natural gas lines will be built to serve the Pacific Northwest (Portland, Seatle and Tacoma), and also the new gas developments in Kansas will be responsible for several shorter lines for local distribution.

Rusk-Gregg–East Texas

ON December 11 the per well allowance in East Texas was reduced from 125 bbl. to 100 bbl. per day, thereby reducing the production of the field by about 85,000 bbl. There are 3,450 producing wells in the Rusk-Gregg field at this time. The new completions average about 100 per week increase in the allowable proper week increase in the allowable production. In view of the depressed crude oil market situation the East Texas allowable should be reduced to a maximum of 300,000 bbl. per day, instead of the present 400,000 bbl. maximum, in-

World Oil Production Figures--Official

All figures furnished direct to World Petroleum by Governments, except where otherwise specified

Figures in U. S. Barrels

(Conversion ratio 7 bbl. = 1 ton)

—1931—

	Total 1930 (revised)	1st 6 mos. 1931	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	Daily aver. Jan.-Nov.
United States	898,011,000	421,392,000	65,991,000	60,645,000	69,375,000	73,101,000	77,164,000	75,116,000	77,961,000	74,831,000	63,636,000	73,079,000	72,851,000	2,346,557
Venezuela	141,652,832	60,025,709	10,579,707	9,806,034	10,705,814	9,579,784	9,834,545	9,519,825	10,339,028	10,133,319	9,703,736	9,751,455	9,818,340	328,657
Russia & Sakhalin	129,955,417	73,973,900	12,072,900	11,141,900	12,654,600	12,318,600	12,796,000	12,989,900	13,941,400	14,066,500	13,573,490	13,918,800	13,885,200	429,219
Persia[2]	43,549,323	21,659,481	3,201,156	3,079,132	3,081,260	3,442,341	4,296,642	4,558,950	4,404,106	4,434,507	4,627,525	3,154,942	3,179,554	124,132
Roumania	39,876,589	23,694,930	4,233,810	3,570,000	3,856,020	3,850,000	4,195,100	3,990,000	4,046,000	3,886,680	3,796,954	3,710,000	3,640,000[1]	128,067
Mexico	39,529,914	17,076,457	2,890,903	2,563,986	2,819,430	2,761,039	3,080,603	2,960,496	3,129,042	2,841,438	2,620,863	2,358,574	2,350,164	90,948
Dutch East Indies	38,722,250	16,952,992	3,226,854	3,225,000	2,625,285	2,625,285	2,625,284	2,625,284	2,841,519	2,765,773	2,601,482	2,579,256	2,446,920	90,383
Colombia	20,343,176	9,380,050	1,657,694	1,565,425	1,774,865	1,467,429	1,479,452	1,435,185	1,490,524	1,512,528	1,414,958	1,500,000[1]	1,564,380[1]	50,486
Peru	12,455,888	4,969,945	986,902	662,022	1,131,155	914,342	762,624	512,900	1,005,712	793,677	784,365	775,000[1]	621,120[1]	26,796
Trinidad	9,418,907	4,824,997	831,552	744,518	844,534	798,134	7 8,528	817,761	842,884	891,908	832,483	844,587	737,190	26,868
Argentina	9,001,671	5,505,965	898,007	796,578	875,400	833,700	1,038,780	1,063,500	1,022,900	1,031,100	988,100	1,081,300	987,300	31,786
India (British)	6,936,315	3,689,933	662,604	635,743	705,568	553,912	563,126	568,980	685,931	693,330	673,125	570,000	570,000[1]	20,606
Sarawak	5,251,541	1,778,295	369,852	231,090	355,453	309,876	302,295	293,151	288,806	283,563	239,302	225,169	221,872	9,342
Poland	4,645,550	2,209,455	390,600	350,700	381,500	357,000	372,155	357,500	377,300	374,997	360,500	365,400	357,700	12,112
Japan & Taiwan[1]	2,250,000	1,172,500	197,500	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000[1]	6,429
Egypt	1,977,660	979,093	196,021	158,210	162,225	160,573	152,418	149,646	143,311	146,468	144,431	143,661	145,068	5,096
Ecuador	1,596,238	835,561	137,531	120,145	126,544	117,763	169,111	164,467	177,085	168,228	162,488	136,647	127,160	4,812
Canada	1,535,827	954,101	179,711	155,651	160,358	153,705	156,392	148,284	119,327	103,314	101,435	99,924	99,037	4,422
Germany (Prussia)	1,209,185	596,194	127,894	98,000	100,030	77,833	95,438	96,999	97,390	107,616	99,484	108,234	122,822	3,388
Germany (Thrga.)		89,276	11,475	9,727	10,965	16,882	23,227	27,000	39,157	60,600	84,375	97,500[1]	105,000[1]	1,455
Iraq	980,000[4]	600,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	100,000[1]	3,293
France	516,642	240,225[1]	40,075[3]	40,075[3]	40,075[3]	40,000[1]	40,000[1]	40,000[1]	40,000[1]	40,000[1]	40,000[1]	40,000[1]	40,000[1]	1,318
Others	220,000	164,700	25,900	25,900	25,900	29,000	29,000	29,000	29,000	29,000	29,000	29,000	29,000	927
Total	1,409,635,925	673,765,759	109,009,648	99,919,836	112,106,981	113,803,198	120,259,720	117,759,828	123,316,422	119,490,546	106,809,096	114,863,449	114,193,827	3,747,099

[1] Estimates. [2] Anglo-Persian Company's figures. [3] Official total, 1st quarter 120,225. [4] Actual production in Iraq probably higher than official total. [5] Revised.

dicating an advisable per well allowance of 80 bbl. per day. Current allowable of 100 bbl. at 83 cents per barrel means an income of $83.00 per well per day, or if the crude oil will be cut to 63 cents per barrel, as anticipated, an income of $63.00, as compared with an income of $66.50 for 80 bbl. at the current price of 83 cents per barrel, thus apparently fully justifying the indicated reduction.

An enlightened step is this direction is apparent in the action of the major producers of Texas in voluntarily shutting down operations on Sunday in an effort to further reduce crude output. If the movement became general in Texas at least 130,000 bbl. per day average would be cut off present production. At present there is no assurance that this constructive action will continue as it is purely voluntary and will be abandoned by the major producers if smaller producers fail to fall in line. Meanwhile the experiment is being watched with interest by the oil industry throughout the country because there seems to be little question that if this move succeeds in Texas it will be adopted in other oil producing States.

The East Texas field is definitely past its peak of operations, and by early summer, active locations will drop to a minimum. Up to December 21 the Rusk-Gregg field has produced around 104,000,000 bbl. of crude oil, or approximately 1.120 bbl. per acre of its proven area.

Oklahoma City—Oklahoma

THE new potential of the Oklahoma City field has been finally established at 9,029,000 bbl. per day from a total of 851 wells. The Corporation Commission estimates the reasonable potential at one-third of the full and hence the official potential for proration purposes has been determined as being 3,013,325 bbl., the daily allowable being 4.5 percent of the official potential. As compared with the previous potentials, measured in April, 1931, the decline of old wells has averaged 14.6 percent for the period. The Wilcox sand wells indicated most drastic recessions of as much as 25 percent.

Kettleman Hills—California

WITH the North Dome already closed in as the result of a unit operation plan suggested by the Department of the Interior, of which Secretary Wilbur said that it was to the interest of the Government as a large owner, as well as to the interest of the industry, to avoid the waste and expense of excessive drilling, it seems likely that the Federal Government will urge the unit operation of the Middle Dome in the near future.

Petroleum Securities Company's No. 1 Burbank on the Middle Dome has been drilled to 9,332 feet where it tested an apparently salt water bearing sand. Plugged up and tested at 9,208 feet the well came in flowing at the rate of 25,000,000 cu. ft. of gas with some salt water. While thus looking more promissing then before the crude oil possibilities of the Middle Dome still remain to be proven.

In view of anticipated declines in the older fields and the inevitable rapid drop in potentials of the flush pools, wildcatting is gradually being resumed throughout the United States. Wildcat operators at this time are most active in East Texas district; several wildcats are starting, or have recently started, in California; Western Kansas continues its slow, but steady expansion; and new activity is becoming apparent in Oklahoma. The coming summer will in all probability see an extensive search for new pools. Only a very low crude price will deter these operators.

BASIL B. ZAVOICO.

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RUSSIA

Official Figures for Operation

1931	Crude Production (bbl.)	Crude Daily Average (bbl.)	Run to Stills (bbl.)	Drilling (feet)
January	12,072,900	389,448	10,399,200	168,458
February	11,141,900	397,925	9,514,400	147,945
March	12,654,600	408,213	11,197,200	226,439
April	12,318,600	410,620	10,569,300	239,699
May	12,796,000	412,774	11,841,900	236,009
June	12,989,900	432,996	11,427,500	227,307
July	13,941,400	449,722	12,248,600	228,706
August	14,066,500	453,758	11,841,200	197,257
September	13,573,490	452,449	12,185,600	205,662
October	13,918,800	448,993	12,802,300	173,020
November	13,885,200	462,840	12,521,600	138,503
Total	143,359,290	429,210	126,548,800	2,188,975
Quota for 1931, Revised 5-Year Plan	192,500,000	527,400	173,250,000	3,000,000

Crude production figures converted from metric tons at seven barrels per ton.

Production

REPORTS from the major oil fields of Baku and Grozni show that crude production of the old oil fields is on the down grade. The fact that the total crude production of all fields of Russia is increasing is due to the high flush production of new fields. The rate of plan fulfillments of the old fields has been decreasing month by month, and the arrears in the plan have grown from four percent in May to about 30 percent during the first 20 days of November. November arrears in drilling have reached 64 percent and run to stills during the same period are about 20 percent behind the plan. It is quite natural for operations in Russia to slow down during the winter season when roads become impassable, and fields inaccessible and drilling is made difficult. The rate of this years arrears, however, is incompatible with the experience of past years.

Investigations made by various controlling bodies of Soviet Russia show that lack of equipment is mainly responsible for the general slowing down of operations of the oil industry. Lack of casing pipe is holding back a larger number of wells from being completed or put into operation and several recently completed wells have been held back owing to lack of pumping equipment.

The Soviet machine works are not yet in a position to cope with the equipment requirements of the oil industry. The Sormovo works are more than 50 percent

in arrears with the delivery of casing pipe. The Kolomma works are 40 percent in arrears with the delivery of mud pumps, and the "Neftemash"-Machine building combine is far behind the plans with the delivery of all kind of oil equipment. Deliveries of casing pipe made during October covered 10 percent of the requirements of Azneft for the month and about 18 percent of the requirements of Grozneft.

Refining

TELEGRAPHED reports from Baku to Moscow report unsatisfactory refining operations at Baku. Some of the plants are from 20 to 25 percent behind plans. Cracking operations are almost 50 percent behind the quota. Arrears are in first place attributed to lack of operating discipline, laxity of technical supervision and to lack of supplies. Lack of the chemicals that are necessary for refining operations is growing acute from month to month. This is shown by the fact that the delivery of sulphuric acid during October, lagged 76 percent behind the plan for the month. The sulphuric acid requirements of the oil industry during 1931 were estimated at 63,000 tons, of which about 38,000 tons were expected to be supplied.

Transportation

THE situation just referred to is accentuated by the partial failure of transportation. The railroads are not in a position to despatch the required tank cars to fields and refineries; tanker fleets of the Caspian sea and river Volga are behind the transportation plans.

Plan's Position

REGARDLESS of the foregoing shortcomings one should not be led to misjudge the potentialities of Soviet Russia's oil fields.

Crude production figures for the 11 months of 1931 are indicative of an increase of almost 24 percent over last year's figures, which under the circumstances is an accomplishment no other Government could afford to allow today.

Wildcatting

AN expedition organized by the Leningrad Petroleum Institute and the Geological Research Department of the Azebardrath oil trust, headed by Professor Golubyatnikov, for the exploration of the oil deposits of the Apsheron peninsula reports the discoverery of rich oil locations at Sikba, South of Karachukur. Deep drilling will be necessary in this region to reach the lower sand. Another rich oil region is expected to be discovered in the Yurta valley. Adjacent to this place where several wildcat wells are being drilled the Kala district seems to be very promising. Drilling has been carried on there for the last eight years, without practical results owing to the fact that exploration was in the upper formations where the oil sands are overlaid by rocks, which hampered correct geologic orientation for selecting the right drilling spots. Deep drilling in the region has yielded gas from a depth of 5,500 ft. with a gas flow of over 1,000,000 cubic yards flowing 400 ft. high per day.

At some distance in a northwestern direction another gas well was opened flowing a stream of gas and oil 500 ft. high with a force that destroyed the rig. At Churadlansk oil was discovered at depths which will necessitate deep pumping and at Kergesk the exploration drilling yielded an initial flow of 1,500 bbl. oil per day. At Pirsagatsk, 100 kilometers from Aliali on the Trans-Caucasian railroad is another oil bearing region which was discovered recently. At Binadavansk 15 kilometers from Pirsagale three gas-bearing locations were discovered. Promejutochnaya mountain is an oil bearing region where the oil sands are 56 ft. thick, commencing at a depth of 200 ft. At Binadavansk, near the settlement of Hidarla, the elevation seems to be an extension of the Surakhani anticline, and the findings seem to promise large resources of light oil with high qualities of lubeoil. Professor Golubyatnikov believes that the new Apsheron discoveries are holding large oil resources for Soviet Russia.

New Refinery

ON January 1, 1932, the foundation stones of a large refinery were laid at Orsk on the Middle Volga river. The refinery, not previously referred to in WORLD PETROLEUM, will have a capacity of over 20,000,000 bbl. of crude per annum and will supply the requirements of the Middle Volga region, Kazakstan and the Eastern metallurgical districts of Russia. The refinery will operate on Emba crude, for which purpose a pipeline will be built to connect Guryev on the Caspian sea with Orsk. The distance is about 465 miles, and seven pump stations will be needed. The cost of the pipeline is estimated at 80,000,000 rbl. and that of the refinery 70,000,000 rbl. Until the line, is completed Baku crude will be supplied to the Guryev district by barge and thence to Orsk by tank cars.

Drilling

IT was stated in these notes last month that 3,250 wells were completed during the first nine months of 1931 in the Soviet oil fields. This has been questioned because a calculation based on the average depth of drilling per well in Russia, at 2,500 ft., and the number of wells would not tally with the total drilling of 1,877,472 ft. as indicated in the figures for operation. In this connection, however, it should be born in mind that it takes more than nine months to complete a well in Russia and, therefore, it may be assumed that a large number of wells were carried over from the previous year, and footage drilled to December 31, 1930, would not have been included in 1931 figures. As a matter of fact the published figures were taken from official sources.

Exports

Soviet Petroleum Exports by Products

Product	Sept. (bbl.)	Oct. (bbl.)
Gasoline and ligroin	1,467,950	1,671,100
Kerosene	452,600	386,725
Diesel, gas & fuel oils	1,221,000	1,425,000
Lube oils	156,800	144,200
Solar oil	.....	37,240
Crude (Incl. Sakhalin)	286,300	233,310
Miscellaneous	142,500	3,000
Total	3,727,150	3,900,575

Soviet Petroleum Exports by Countries (Official)

Country	Sept. (bbl.)
England	565,845
Italy	612,931
France	509,017
Germany	325,543
Belgium	69,818
Denmark	192,401
Turkey	22,736
Czecho Slovakia	154,252
South Africa	258,162
Spain	198,108
Sweden	9,748
Egypt	89,310
Bunkers	194,836
India	69,819
All others	454,624
Total	3,727,150

Official figures given in tons(conversion ratio average 8.1183 bbl. per ton.

Late Cables

APSHERON.

NINETEEN wells are presently drilling at Apsheron of which one is completed at a depth of 4,500 ft. with a flow of 9,000 bbl. per day.

ARMAVIR-ROSTOV DON section of the Armavir-Ukraine pipe line has been completed. Pipeline is designed to carry tractor fuel over the 320 mile distance between Armavir and Rostov.

MEXICO

MEXICO CITY.

Future Operators

BASING their conclusions upon the fact that petroleum produced by all other companies operating in Mexico, excepting the Huasteca Petroleum Company (Standard Oil Company of Indiana), is now being acquired and distributed by the Mexican Eagle Oil Company of the Royal Dutch-Shell group, well informed oil men in Mexico City are of the opinion that the near future will witness the greater part of all Mexican petroleum production and distribution being handled through one large company.

These oil men point out that such a thing will be but the natural result of the present economic trend. The terrific overhead that distribution entails in Mexico and the increasing costs of production are making operation difficult for the smaller companies. The maintenance of pipe lines, fleets of tankers, and shipping by railroad entail great expenditures and heavy investment, and are becoming too much for many of the domestic petroleum enterprises. A large company, it is argued, is obviously in a better position to handle such transactions, besides those of production, without inconvenience to itself, even in these days of world-wide depression of the petroleum markets. Mexican Eagle Oil Company is the largest producer and distributor in the Republic. Its 1930 production was 28.1 percent of the entire year's output of the country.

River Obstruction

OFFICIALS of Mexican Eagle in Mexico City minimize accounts of a closure of its refining plants on the Isthmus that have spread from the Mexican capital to New York. The officials declare that while a sand bar in the river resulted in a considerable reduction of their petroleum shipments, work is progressing and will continue to progress in the Tehuantepec area, albeit on a rather restricted scale, due to the impediment in the river.

The company has applied to the Federal board of arbitration and concilliation for authority to dismiss some Tehuantepec workers, but these dismissals will be in the nature of lay-offs, pending the clearing of the stream and the resumption of full activities. The refinery has not and will not be closed, the officials aver. It is understood that the Federal Government proposes to send a dredge to remove the sand bar and otherwise to improve the river to allow the full operation of petroleum carriers.

Huasteca Expansion

REPORTS published by several New York daily newspapers to the effect that the Huasteca Petroleum Company contemplates the execution of a large expansion program in Mexico in the near future are much exaggerated, it is learned from authentic sources. It is said that the present world depression precludes any great expansion work and necessitates the most careful consideration of additional activities, even when these are conducted on a small scale. It is understood that the company proposes to install a new cracking unit at its Tampico refinery in the near future. This, it appears, will be the only additional activity the company contemplates for the immediate future.

Development

THERE has been little activity in the Mexican petroleum fields from January 1, to November 15, 1931, reports the Secretary of Industry and Commerce, both on account of the restrictive measures to which the domestic industry has been subjected for an extended period, and to the bad condition in the fields and roads on account of the exceptional rainy season this year. However, in the Isthmus region suspended operations in Tuxpam have been renewed. In the period October 11-November 10, work was caried on in the following fields: North and Center of Nuevo León; North, Center and South of Tamaulipas; Southeast of San Luís Potosí; in Tantoyuca, ex-canton of Ozuluama; in Toteco, Jardín and Paso Real, of the Faja de Oro; in Mecatepec and Miahuapan on the South of the Tuxpam river; in Palma Sola and Poza Rica in the North of Papantla, and in Tonalá, el Burro, el Plan and Cuitlaxoyo.

Both in the northern frontier and in the Isthmus of Tehuantepec, exploration work has proceeded by geophysical methods. In the Isthmus of Tehuantepec construction of roads is underway between the newly discovered fields in the northern region, near the boundry of Tabasco. Endeavors are being made to link the El Tigre region with that of El Burro and Tonalá. the latter having adequate transportation facilities for exploitation consisting of the river Coatzacoalcos which is the most important navigable river in the northern part of the Isthmus.

During the period referred to four productive wells were brought in, with a combined initial daily capacity of 5,076 bbl. Two of these are located in the important Tonalá field and the other two in El Burro, southeastern part of Tonalá. Last year up to November 10 no fewer than 50 productive wells were completed in the principal petroleum

(Continued on the following page)

ECUADOR

OPERATING only one small refinery, 92 percent of the oil production of the Anglo-Ecuadorian Oilfields, Ltd., in Ecuador is exported as crude. As a premium is paid for low cold-test oil, the company separates crude from the low cold-test oil, using separate piping and storage. Production of crude increased during 1930-31 fiscal year by 105,000 bbl. to 1,432,641 bbl. (figure from the annual report of Anglo-Ecuadarian Oilfields, Ltd., converted at 7 bbl. per ton) of 41.1 deg. Beaume average oil. Total footage drilled was 129,138 ft. compared with 180,000 ft. in 1929-30. As of June, 1931, there were 342 wells producing and ten being drilled. Three large tanks and 51 small tanks were erected during the year to take care of the increased production. Successful results have been obtained from re-pressuring by the new gas compressor plant, and neighboring wells have thus been enriched. A new and promising shallow area has been brought in as the result of the discovery of a well maintaining a flow of 1,000 bbl. per day of good quality oil.

fields. The entire Mexican production for October, nevertheless, was the lowest during the past year being but 28,034,-153 bbl. as reported in WORLD PETROLEUM for December, 1931.

Exports

OCTOBER exports decreased as compared with those in September; but without marking new levels in the high and low fluctuations of Mexican exports for the current year. Exports of crude petroleum and its derivatives during the first 10 months of 1931 amounted to 19,260,800 bbl.

Prices

QUOTATIONS for crude oil during October, f.o.b. Tampico, without duty, were as follows: heavy, $0.44 per bbl.; light, $0.93 per bbl. Gasoline has continued to sell in Mexico City at $0.17 Mexican money per litre.

Legal Compromise

A LONG controversy between the Vera Cruz State Government and the Dutch Crown Petroleum Company, of the Royal Dutch-Shell group, has been settled as the result of the exercise of his good offices by Manuel C. Tellez, newly appointed Secretary of State and former Mexican ambassador to the United States. The controversy arose when Vera Cruz claimed some 2,500,000 pesos from Dutch Crown as taxes for the transfer to it of some property by its parent company. The petroleum company refused payment on the ground that the demand was excessive. The State Government embargoed company property to the value of 40,000,000 pesos (about $19,000,000), against which action the company obtained an injunction from a Federal district court judge. The matter was laid before Secretary Tellez, who called representatives of the State Government and P. J. Jonker, secretary of the company together for conferences in his offices.

The matter has been settled by the company paying the State 300,000 pesos (about $140,000).

Concession

THE granting of a concession to the surface of 31,740 hectares in San Buenaventura municipality, Couahuila State, for petroleum exploration and exploitation to Senora Florinda Cuellar Vda. de Rios, wealthy Mexican woman, by the department of petroleum of the Ministry of Industry, Commerce and Labor, has given more substance to the contention of oil men that the rich Texas petroleum fields extend into northern Mexico.

DOUGLAS GRAHAME.

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CANADA

Imports

CANADIAN imports of crude petroleum showed an upward tendency in October, the figures being 2,781,171 bbl. compared with 2,758,116 bbl in September, and 2,706,598 bbl. in October, 1930. It is worth noting, however, that values show a heavy decline compared with 1930, the figures for October of this year being $2,109,621 compared with $3,680,-577 in the same month of 1930. The advance in October of this year is probably due to heavier stocking toward the end of the shipping season.

The port of Montreal reports a particularly active year in crude shipments with heavy increases in unloadings due no doubt to the new refinery of the British American Oil Company in Montreal East. Imports through Montreal have reached somewhere around 8,157,468 bbl. during the 1931 season, or over twice 1930 movements.

Gasoline imports continue to show heavy declines. Imports for October, 1931 were 222,276 bbl. compared with 265,380 bbl. in September, and 476,845 bbl. in October, 1930. It will be noted that the figures for 1931 are less than half those of 1930.

Price Investigation

TURNING from statistical data to more general matters, we can note one of the outstanding events of the month has been a revival of the agitation for an investigation into the petroleum industry of Canada, with particular reference to gasoline prices. Public attention has been definitely focussed upon gasoline prices through the possibility of higher taxation upon the product.

Taxation

GENERAL business conditions are being reffected in Provincial budgetary deficits, and higher gasoline taxes are being looked to by harassed politicians as a source of increased governmental revenue. Already the Quebec Government has announced a further tax of one cent per Imperial gallon, making six cents in all. Naturally, the prospect of more expensive gasoline, which is something that affects the public very generally and closely, is apt to produce a critical frame of mind that can quite easily result in an outburst of ill-considered and unreasonable public opinion.

Under such conditions it is essential that a balanced and informed public viewpoint be maintained to ensure against undue pressure being brought against the Dominion Government to reduce the existing tariffs upon petroleum products, which would result in serious injury being done to the refining industry of the country. Under these circumstances it is unfortunate that certain sections of the press should foster a prejudiced and unreasonable viewpoint by publishing articles that are not only ill-informed, but also vicious inasmuch as they appear to deliberately present only certain phases of a complicated situation.

Naturally, the condition that is most accentuated is the difference existing between gasoline prices in Canada and the United States; but no mention is made of the peculiar conditions that render such comparisons unsafe. Canadian oil companies have taken the stand that they are not going to sell gasoline at a loss, which is fair enough. They point out that the recent tariff was put on not to give them an extra profit but to protect the Canadian industry against distress gasoline being dumped into Canada.

Statistics

IT is pointed out that the profit on the products obtained from imported crude is less than two-fifths of a cent per Imperial gallon, which can hardly be

considered excessive. Canadian purchases of crude oil in 1930 were 1,064,434,974 Imperial gallons valued at $67,640,975, or 6.34 cents per Imperial gallon. Gasoline production in the same year was 445,599,417 Imperial gallons valued at $60,789,572 or 13.632 cents per gallon. The difference between the price of crude and the selling price of gasoline was 7.288 cents per gallon. On the other hand, the production of by-products was 618,935,557 gallons in 1930 valued at $30.020,139, or 4.851 cents per Imperial gallon. Thus the loss on by-products compared with price of crude was 1.503 cents per Imperial gallon in 1930. In other words, the loss on the production of by-products in 1930 was $9,301,098.

A careful analysis of all figures shows that the gross profit on gasoline at Canadian refineries is around 1.716 cents per Imperial gallon compared with 4.628 cents in 1926. Write-offs for capital employed at seven percent per annum reduced the profit per Imperial gallon to a net figure 1.022 cents in 1930, compared with 3.627 cents in 1926.

It will thus be seen that the profit on gasoline has steadily declined in Canada, and that the benefits accuring from increased turnover and higher efficiency have been handed on to the consumer. With these points to back their position the oil companies have indicated their willingness to cooperate with any Government investigation, and there is a tendency to welcome any such move as it would tend to clarify the situation in the public eye. It is pointed, out, however, that any such investigation should be made by the Federal Government, and that all phases of the industry should be included. Investigations on the part of Provincial Governments would only involve needless expense, and duplication.

New Plant

IT is announced that the Shell Oil Company of Canada will make Hamilton, Ontario, its district headquarters, and will erect a 285,700 bbl. storage and distribution plant, also a refinery.

General business conditions still remain somewhat obscure, with a more cheerful undertone. There seems to be a firm opinion through the country that international business channels are undergoing permanent change, and the general wide awake outlook appears to indicate that Canadian industry will consolidate its position with regard to any changes that may come.

R. C. ROWE.

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POLAND

Production

Polish Crude Oil Output

1931	Bbl.
First Quarter	1,122,800
Second Quarter	1,080,655
Third Quarter	1,112,797
October	365,400
November	357,700
Total 11 months	4,039,352
Total for 1930	4,645,550

Exports

THE tendency for exports of Polish refined petroleum products to fall off, has been temporarily arrested though the drop is likely to continue during the winter months as refineries are decreasing their throughputs of crude oil. Exports of all products last August aggregated 145,999 bbl. compared with domestic consumption of 217,798 bbl. Consumption, however, now is increasing, particularly kerosene and fuel oil, due to the winter months. Exports for September were 120,505,661.

Polish September Exports and Consumption

	Exports (bbl.)	Consumption (bbl.)
Gasoline	50,401	52,850
Kerosene	34,762	106,001
Fuel oil	37,156	42,875
Paraffin	15,323	5,103
Lube oil	17,577	32,655
Others	15,757	28,938
Total	170,989	268,422

POLAND is rich in natural gas and the output is steadily increasing. For the first nine months of 1931 no less than 350,063,000 cubic meters of gas were produced from a total of 562 wells under operation, compared with 486,506,000 cubic meters for the entire year of 1930. The most productive wells are in the Daszawa field, where there are but six wells flowing, and at the average rate of 35.2 cubic meters per minute at 937 lb. initial pressure from a depth of 1,485 to 2,640 ft. It is a dry gas, however, and there is limited use for it, hence drilling has ceased. It is piped to the town of Lwow, capital of Galicia, 90 kilometers distant. The pressure is falling very slowly.

The gas from the Boryslaw and Bitkow fields where there now are 448 and 89 flowing wells, respectively, is a wet gas, and in 1930 no less than 269.457 bbl. of natural gasoline were produced. Altogether there are in Poland 22 natural gasoline plants located at Boryslaw (15), Drohobycz, Schodnica, Bitkow and Rypne. Production has steadily increased from 126,308 bbl. in 1926 to the quoted output of last year.

STEFAN BARTOSZEWICZ.

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Pipe Line Flow Control

IN response to the need for flow controllers that will do more than simply record differential pressures with the use of progressive charts there has appeared on the market a flow recorder-controller which makes use of a chart reading directly in rate of flow, but uniformly graduated. Considering that the rate of flow in pipe lines follows the square-root of the differential pressure created at the orifice, a chart of this type is obviously able to avoid the disadvantages of the square chart on which the graduation becomes progressively wider from the center to the outside, giving a fair amount of accuracy at high rates of flow but decreasing in accuracy, readability, and controlability as the rate of flow decreases.

The new instrument achieves uniformity of graduation by having one leg of the manometer progressively smaller in diameter so that the curved cross-section of this leg produces uniform rise and fall of the mercury in the other leg and uniform motion of the float per increment of change in rate of flow.

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Subscriptions

The money exchange rates at which subscriptions to WORLD PETROLEUM at present are accepted are given on page 1.

FINANCE

Paris—December

CREDIT Minier Franco-Roumain, French subsidiary and sales organization of the S. A. Creditul Minier, one of the largest national oil companies in Roumania, closed its accounts for 1930-31 with a gross profit of Fr. 9,499,801 and a net profit of Fr. 1,112,480 against Fr. 9,104,788 in 1929-30.

No dividend is to be distributed and the whole sum has been put aside for amortization. This measure has partly been taken out of precaution and partly because the slump in crude oil prices has had a marked effect on the Creditul Minier in Roumania. Both companies are now going in for the strictest economies and are reducing expenses to the utmost.

Credit Minier Franco-Roumain has a capital of Fr. 35,000,000 and is now authorized to import 329,000 bbl. of petroleum products which represents an increase of 133,000 bbl. per annum over its previous importing license. The company ranks among the independent importers of petroleum products and is a member of the Fédération Francaise des Carburants, an organization which it joined after the agreement between the Independent Petroleum Importers and the Chambre Syndicale des Raffineurs expired on October 1, 1930.

Michel Constantinesco, general manager of the Creditul Minier, whose views on the Kessler plan appear elsewhere in this issue, is at present in Paris with the Roumanian delegation which has been sent to France to negotiate with the Government for an increase in the importations of Roumanian petroleum products. Mr. Mrazec, well known Roumanian geologist, also forms part of the delegation.

NOT having been able to obtain the necessary ministerial authorization to increase its capital from Fr. 81,000,000 to Fr. 200,000,000 the S. A. E. M. Pechelbronn has issued 30.000 5½ percent bonds of Fr. 1,000 each. These bonds are amortizable in 30 years and carry Fr. 55 interest per annum payable in half yearly installments. The bonds are issued at Fr. 990, interest running from December 1.

THE difficulties confronting Credit General Des Petroles during the past two years have been reported several times in WORLD PETROLEUM. They have not yet been solved, and the present chaotic state of affairs only makes the board's task more difficult and prolongs the already protracted negotiations which have been undertaken with a view to reorganizing the company. The quorum not having been attained when the shareholders of the Credit General Des Petroles met on December 11, deliberations have been put off until some future date. A balance sheet for 1930 has nevertheless been published which is anything but reassuring.

Losses for the year amount to Fr. 5,220,931.15. On the credit account we find the company is owed the sum of Fr. 181,192,910.34. Liquid funds amount to only Fr. 533,807.23 and although investments are valued at Fr. 293,120,820.55 they were only worth Fr. 213.240,789 according to last quotations in December, 1930, and have lost a great deal of ground since that date. Its assets are therefore somewhat doubtful. On the other hand the company owes Fr. 59,374,004.21 to different creditors, has stood security for the sum of Fr. 277,681,837.19, has put aside 9,695,226.99 against doubtful debtors and reports Fr. 200.000,000 against different reserves.

Lucien Haas, who originally formed the company stated (unofficially) that he hoped to be able to give the shareholders definite information concerning the reorganization of their company at the next general meeting. But when that was to take place he could not then say. It appears that most of the creditors of the Group Credit General Des Petroles-Malopolska are agreed to accept the conversion of their debts into six percent bonds secured by mortgage and redeemable in 10 years time. The total sum thus converted would exceed Fr. 300,000,000.

ON December 12 at an extraordinary meeting of shareholders a merger was decided between Le Bitume Liquide and the S. de Construction et Revetement des Routes. The latter company brings in the whole of its assets and liabilities as they stood on October 1, 1931. The company will in future be known as Le Bitume Liquide, Construction et Revetements des Routes.

As a result of this decision the shareholders voted an increase in Le Bitume Liquide's capital of Fr. 35,000 bringing it up to Fr. 17,035,000.

E. J. ANDRE.

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London—December

AS is usual when markets are quiet, oil shares have been affected by senti-

Paris Bourse Prices

1931 Div.	Par	Share	November 16 to December 12 First	High	Low	Last	Change	Position on Dec. 11 1930
30 Lei	500 Lei	Astra Romana	54	54	46	46	—8	98
....	500 Lei	Colombia	43	43	34	38	—5	75
50 Lei	500 Lei	Concordia	39	40	29	30	—9	71
....	500 Fr.	Cdré. Gen. des Pétroles act.	..	..	..	..		..
....	500 Fr.	Cdré. Gen. des Pétroles part.	635	635	470	545	—90	..
....	500 Fr.	Franco Pol. Pétroles act	50	50	40	40	—10	60
....	....	Franco Pol. des Pétroles part	..	..	..	..	..	..
1 $	10 $	Franco Wyoming	156	156	123	123	—33	360
20 Fr.	500 Fr.	S.G.des Huiles de Pétroles act	207	207	150	152	—55	476
....	....	" " part	..	48	47	47		184
....	500 Fr.	C. Française des Pétroles	..	..	..	..		..
....	500 Fr.	C. Industrille des Pétroles	640	680	480	480	—160	849
70 Fr.	500 Fr.	Lille Bonnières Colombes prio	740	750	625	635	—105	1000
45 Fr.	500 Fr.	" " ord	441	447	350	350	—91	660
....	500 Fr.	Malopolska act	19	26	19	23	+4	..
....	....	Malopolska part	71	83	65	65	—6	..
....	....	Mexican Eagle	41	41	32	34	—7	47
....	250 Fr.	Omnium Inter. des Pétroles	66	67	50	55	—11	100
50 Fr.	500 Fr.	Pechelbronn	525	525	450	450	—75	840
60 Fr. B.	500 Fr. B.	Petrofina	400	400	351	361	—39	475
240 Fl.	1000 Fl.	Royal Dutch	4100	14100	11730	11730	—2370	32300
24 Fl.	100 Fl.	Royal Dutch 1/10	1447	1447	1192	1192	—255	3260
....	1 L	Shell	206	206	156	164	—42	482
25 Fr.	500 Fr.	Steaua Française	176	176	160	160	—16	140

ment rather than business. A bear account appears to have been built up by market interests who have since taken every opportunity of depressing prices. This accounts for the rapid fluctuation of the more active shares. The Continent has supported Internationals on any decline in sterling, but has realized again as the £ improved. The general tendency has been downwards, with some big losses among the leaders. Practically the only supporting influence has been the continued effort to effect restriction of output in the United States.

ATTOCKS have come into the limelight again as a result of the announcement that oilsands have been struck at about 4,900 ft., giving moderately good initial production. This company originally obtained its supplies from shallow wells, and when the latter showed signs of exhaustion a deep drilling campaign was adopted. The latest development is one of the first indications that deeper drilling may lead to the discovery of a steadier source of supply than the company has enjoyed recently. After rising to 7/8, however the shares have come back. Although the new development attracted considerable interest in the market here, most of the buying of the shares was reported to come from the East.

NO one was surprised when Anglo-Persian, as announced last month, fell into line with other leading companies and omitted the interim dividend on its ordinary shares. The omission is nevertheless notable in view of the British Government's holding of 7,500,000 shares and the 3,500,000 shares held by the Burmah Oil Company. Although the official statement notifying the absence of an interim payment left the door open for a distribution later, the market is not expecting that any dividend declared for 1931 will be considerable. The company is likely to have been adversely affected by the decline in sterling as much as any.

CREATION of over £2,000,000 of new Anglo-Persian capital will be required to carry out the terms of the offer made to holders of the preference shares of Scottish Oils, and Pumpherston, Broxburn, and Oakland Oil, three of Scottish Oils principal subsidiaries. Two Anglo-Persian nine percent second preference shares are offered for every three Scottish Oils seven percent, and two Anglo-Persian eight percent preference for every three shares in the other companies. Acceptances to date indicate that practically all the shareholders are exchanging. Anglo-Persian already controls all the companies mentioned through its holding of Scottish Oils ordinary. The main business of the Scottish Oils group is refining crude imported by Anglo-Persian, the Scottish shale oil industry having become unprofitable owing to the low prices for oil products ruling in recent years.

TAXATION inequities in India formed one of the chief themes of the Hon. Lionel Holland, chairman of British Burmah Petroleum at the annual meeting. He informed shareholders that the reduction in the import duty on oil products in the Indian budget of 1930, and the concurrent raising of the export duty on indigenous kerosene, had left the Indian and Burmah producer subject to a flood of surplus oil from America and Russia. Despite the payment of nearly £200,000 in taxes, royalties and excise duty during the year to July 31 last, the British Burmah accounts show a profit of £124,935 which is within £11,500 of the figure for 1929/30 and the tax free dividend on the company's 8/- shares is only reduced from approximately 6¾ percent to approximately 5¼ percent. In view of its difficulties, the company does not seem to be doing too badly.

LOBITOS has been unfortunate with its subsidiary, Anglo-Ecuadorian Oilfields, for the trend of oil prices has been consistently downward since the latter's properties started producing. This company entered the dividend list for the year 1928/9 with a return of 3½ percent, which was repeated for the following 12 months. Accounts for the year to June 30, 1931, however, show a net loss of £42.721 against a profit of £104,115. No dividend is paid and a surplus of £77,622 brought in is reduced to £34,901. The company, however is well placed, with a good property, sound management and finance, and ample cash resources. Production could be expanded considerably should conditions warrant it, but a recovery in prices will evidently be necessary before the undertaking can become a dividend payer on any considerable scale.

ALEC H. DAY.

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New York-December

CONTINUED pressure has forced the stock market into new low ground. After having displayed greater than average resistance the oil shares also sank to new low levels, probably reflecting some recurrent weakness in gasoline prices and other normal seasonal influences. Neither the refining nor the producing branch has restricted operations as severely as had been hoped; but the basic position of the industry as it enters 1932 has been improved during the past year.

More incomprehensible than the action of the stock market in the recent months was the extreme weakness in practically all divisions of the bond list, which provided among other apparent absurdities the anomalous spectacle of creditor obligations of a given corporation selling on a higher yield basis than its preferred stock. Such hysterical conditions cannot last indefinitely, and there has

London Stock Exchange Prices

1931 High	1931 Low	Last Year's Div. % per Ann.	Share	November 15 to December 15 First	High	Low	Last	Change
9/16	3/4	....	Anglo-Ecuadorian	11/32	11/32	3/4	3/4	— 3/32
2 3/8	1 1/32	17½	Anglo-Egyptian 'B'	1 3/4	1 3/4	1 1/16	1 1/16	— 3/16
2 13/32	1 3/4	15	Anglo-Persian	1 15/16	1 15/16	1 7/16	1 7/16	— 1/2
5/8	9/32	25	Apex Trinidad (5s.)	15/32	3/8	7/16	13/32	.....
31/32	7/16	....	Attock	5/8	5/8	5/8	5/8	+ 1/8
1/16	1/8	5	Brit. Borneo (6s.)	3/16	3/16	3/16	3/16	.....
7/32	5/32	5¼*	Brit. Burmah (8s.)	5/32	7/32	5/32	9/16	+ 1/32
5/32	1/16	....	Brit. Controlled ($5)	1/16	1/16	1/16	1/16	.....
1/4	1/16	....	Brit. Controlled Pfd. ($5)	1/8	1/8	3/32	3/32	— 1/32
3 5/8	1½	22½	Burmah	2 1/16	2 1/16	1½	1½	— 3/16
13/32	3/32	12c.	Canadian Eagle (No par)	9/32	9/32	1/4	1/4	— 1/32
11/16	3/8	....	Creole (No par)	19/32	21/32	9/16	9/16	— 1/32
5/32	1/16	....	Kern River (10s.)	3/32	3/32	3/32	3/32	.....
1½	11/16	10	Lobitos	1 1/16	1 3/32	13/16	11/16	— 1/4
17/32	9/32	6	Mexican Eagle ($4 Mex.)	5/16	5/16	9/32	9/32	— 1/32
36½	24¾	40c.	Pan American 'B' ($50)	30½	34½	30½	31½	+ 1
3/4	5/32	2½	Phoenix	7/32	7/32	5/16	5/16	— 1/32
26 5/16	9¾	17	Royal Dutch (fl. 100)	14 7/8	15¾	13¼	13½	— 1¾
3 27/32	1 11/32	17½*	Shell Transport	2 3/32	2 3/32	1 21/32	1 21/32	— 7/16
9/32	5/32	4	Steaua Romana	3/4	3/4	7/32	7/32	— 1/32
1 11/32	3/8	5	Trinidad Leasehold	1 1/32	1 1/8	1†	1 1/32†	.....
9/32	3/8	....	Untd. Brit. of Trinidad (6s.8d.)	5/32	5/32	3/8	3/8	— 1/32
1 13/32	29/32	17½	Venezuelan Oil Concessions	1 3/32	1 2/32	13/16	13/16	— 9/32

Nominal value of shares £1 unless otherwise stated by bracketed figures. * Denotes Tax-free dividend. † Denotes "Ex-dividend" price. c. Denotes cent per share.

been much hope aroused that the pre-Christmas rally marked the end of the severe two-year bear market.

IT was with some surprise that the oil industry and the financial community received the announcement of the omission of Gulf Oil Corporation's dividend, which had been maintained for years at the very conservative $1.50 rate (compared for example with the 1929 earnings of $9.38 per share after liberal reserve charges). Even in 1930 net of $2.35 per share was substantially above dividend requirements, and though 1931 net probably fell below $1.50 a share it would almost seem that financial strength and surplus account would justify continuance of disbursements during a period when most stockholders are exceedingly in need of their dividends. An official of the company has stated that in accordance with long term management policy, cash resources have been and are being used in the acquisition of new properties at bargain levels.

It may be also recalled that the $60,000,000 collateral trust bond issue of June, 1930, of the Union Gulf Corporation, a subsidiary, requires maintenance of collateral of market value equal to 130 percent of the principal amount outstanding, and that the market value of the original collateral of shares of Pullman, Aluminum, Pittsburgh Plate Glass, Pittsburgh Coal and U. S. Steel has declined considerably below that point, thus making it necessary for Gulf Oil to tie up additional assets for this purpose. It may be reflected, however, that a large proportion of the Gulf Oil stock is closely held by the Mellons and their associates, so that loss of dividends for a time will not cause hardship upon a large number of individuals, as would be the case if companies such as Standard Oil (N. J.) and The Texas Corporation were to omit payments.

THE current compilation of Standard Oil Company dividends by Carl H. Pforzheimer and Company reveals total 1931 payments of the group of $220,739,182, a decline of 23 percent from the 1930 total which was the all time high record. It is perhaps remarkable that the 1931 total exceeds the 1928 payments by about $2,000,000. The fourth quarter payments of $48,530,230 showed a much greater decline than the entire year, being 42 percent below the 1930 fourth quarter.

REFLECTING the adverse effects of oil industry depression upon the supply companies, National Supply Company omitted the regular $1.75 quarterly preferred dividend which was due on December 31. Even though financial position as of September 30 was very strong, the deficit of $3,093,372 reported for the first nine months of the year might have been considered to indicate this possibility.

IT is stated that Phillips Petroleum had an operating profit of about $1,850,000 for November before deduction of bookkeeping reserves. This is the largest monthly earnings this year. About a year ago in connection with construction plans Phillips arranged loans of $20,000,000 with a banking group. These mature late this month, but by that time will have been reduced to $11,000,000. Satisfactory arrangements for extension of the balance have been made and the company hopes to retire them out of current earnings.

IT is estimated that if only normal charges against income are made at the year-end, Tide Water Associated will be able to show a moderate consolidated net profit for the year. The fairly substantial profit of the third quarter offset the losses of the first six months, leaving a nine months profit of $175,711. In a sense, therefore, the final results for the year depend upon the showing of the fourth quarter, concerning which it is said that up to well into December operations had been profitable. C. C. BAILEY.

New York Stock Prices

1931 High	1931 Low	Current Div. $ per Annum	Stock (Par Value $)	November 23 to December 19 Sales (Shares)	First	High	Low	Last	Net Change[1]
23⅝	8⅞	1.00	Atlantic Refining (25)	77,700	12	12¼	8⅞	9⅞	—1⅞
14½	4¼	....	Barnsdall 'A' (25)	90,400	6½	6⅞	4¼	5	—1⅞
3¼	¾	....	Colon Oil (No)	23,000	¾	⅞	¾	⅝	— ⅛
12	5	....	Continental Oil (No)	118,700	7⅛	7⅛	5	6	—1
3⅞	1⅝	....	Creole Petroleum (No)	57,700	2¼	2⅜	1⅞	2⅛	.....
75½	25⅜	....	Gulf Oil Corp. (25)	53,500	46	48	25⅜	29	—15
72	46⅜	2.00	Humble Oil & Ref. (25)	25,100	52	52½	46⅜	46½	—5½
18¼	7¾	0.50	Imperial Oil, Ltd. (No)	32,400	10	10¼	7½	8¼	—1¾
4⅝	1⅛	....	Indian Refining (10)	6,300	2	2	1¼	1¼	— ⅞
15½	7⅜	1.00	International Petr. (No)	97,300	10⅝	10⅞	7¾	9⅛	—1½
19½	5¼	....	Ohio Oil (No)	84,200	7¾	8¼	5½	5⅞	—2
36½	19	0.80*	Pan Amer. P & T. 'B' (50)	1,300	23	23	19	19	—4
16⅝	4	....	Phillips Petr. (No)	122,300	7	7	4	4⅝	—2⅜
20¾	5	....	Prairie Oil & Gas (25)	24,300	7½	7⅝	5	5¾	—1⅝
11⅞	3¼	....	Pure Oil (25)	73,100	5⅝	5⅝	3¼	4¼	—1⅝
6¾	⅜	....	Richfield Oil (No)	15,700	1	1	⅜	⅝	— ⅜
42⅝	13½	2.27†	Royal Dutch N. Y. (13⅔)	33,000	16⅜	17	13¾	14⅜	—2¼
20¾	6	....	Seaboard Oil (No)	53,700	8	8⅛	6	7	—1
10¼	3	....	Shell Union (No)	71,500	4½	4¾	3	3¼	—1¼
15⅞	4⅛	....	Sinclair Consol. (No)	206,500	6⅞	7¼	4⅛	4¾	—2
12⅞	2½	....	Skelly Oil (25)	15,400	4¼	4¼	2½	2¾	—1¾
21	9	1.00	Socony-Vacuum (25)	307,800	12¾	13½	9	9¾	—3¼
51⅜	23⅝	2.50‡	Standard Oil of Calif. (No)	212,900	31⅞	32¾	23⅝	26⅝	—5
38½	14½	1.00	Standard Oil, Ind. (25)	203,400	19⅞	20⅝	14½	15⅞	—4⅛
23⅝	12⅝	1.60	Standard Oil, Ky. (10)	29,300	16⅛	16¾	12½	14	—2⅛
52½	26¾	2.00§	Standard Oil, N. J. (25)	569,700	32½	34	26¾	28¾	—4⅛
45¼	26¾	1.00#	Sun Oil (No)	10,400	31	31	29	30	—1½
36¼	9⅞	2.00	Texas Corp. (25)	239,500	18⅛	18½	9⅞	13	—5⅛
9	2¼	....	Tide Water Assoc. (No)	65,200	3⅜	3¾	2¼	2⅞	— ⅞
26⅝	11	2.00*	Union Oil of Calif. (No)	32,300	15⅝	16¼	11	12½	—3
1⅞	¼	....	Venezuelan Petr. (5)	5,100	⅜	⅜	¼	⅜	— ⅛

[1] Since close of last month's table. * Paid so far this year. † Paid for 1930—no regular rate. ‡ Also paid 2 percent in stock at close of 1930. § Including extras. # Also paid 9 percent in stock at close of 1930. * Also paid 4 percent in stock in 1930.

The Oil Outlook

FOLLOWING his recent trip to the Pacific Coast, Charles F. Meyer, chairman of the executive committee of the Socony-Vacuum Corporation, and president of the Standard Oil Company of New York, stated that he considered the oil industry to be in better shape than any time during the past year. "If the States can maintain a tight rein on production of oil or prevent any important change in the rate of output," he continued, "the industry may expect to make better improvement. Conditions abroad also have changed for the better as the result of a recovery of prices of oil in Roumania. Roumanian oil dumping policies have so reacted that many producers have been forced into bankruptcy."

Mr. Meyer believes that there is a possibility that Russia may cooperate with other nations in an attempt to keep world oil production within the requirements of consumers.

SHIPPING

Completion

THE balance of the large tanker building orders placed within the last two years is nearing completion. The Anglo-Saxon Company figures extensively in this respect, but there are still several Scandinavian owners taking delivery of new ships for tramp work. Prospects of employment for such ships are not bright and operators are now faced with the problem that when tankers are actually needed, ships completed now may be obsolescent from the point of view of speed and carrying capacity in view of the fact that loaded speeds have a tendency to increase and the new freeboard regulations may alter the design of ships.

One of the most interesting new vessels is one of the smallest. This is the BEN SADLER of the National Benzole Company, London, to which brief reference was made in these notes recently. This ship is intended for the coastwise carriage of gasoline and other refined petroleum products. Hitherto on ships of this small type cargo has been carried in detachable tanks, but on the BEN SADLER the size of the tanks made it difficult to build them detachable. The principal reason for removing them was because of corrosion and the necessity for inspecting them on shore. The corrosion which takes place in oil tanks of this nature is generally at the connections between the tanks and the ship's hull. Electrical welding was used to a great extent. The welds were arranged at the toes and heel of the connecting bars, thus obviating the possibility, present in rivetted connections, of the liquid getting under the bar and between the bar and the plate. It is quite likely that the BEN SADLER will in the future be followed by other similar ships. Meantime there is no doubt that the demand for coastwise tankers for work in British waters is increasing. On December 10 the 11,500 tons d.w.c., 4,100 s.hp., twinscrew tanker GARDIUM was launched at Wallsend-on-Tyne to the order of the Anglo-Saxon Petroleum Company; two four-cycle Diesel engines were installed.

At the other end of the scale in completions we can consider the 11½-knot 16,400 tons d.w.c. tanker DANMARK recently delivered to the Myren Steamship Company. This ship is said to be the largest oil-carrying vessel built in Scandinavia to date, having a length between perpendiculars of 489 ft. 6 in., a beam of 67 ft. 6 in., a loaded displacement of 22,420 tons on a draft of 29 ft. 4½ in. The total horsepower on twin screws is about 5,000 i.hp. giving her a loaded speed of about 11½ knots. Opinion still varies among tanker men as to whether the very large, moderate speed ship or the smaller fast-running ship, is the better, and this is a difference of opinion which applies not only to the tramp owners, but also to the oil companies themselves.

Tankers Recently Launched and Completed in Europe

Name	Owner	Tonnage	Remarks
BORG	Sigurd Herlofson Ltd. Moss, Oslo	11500 Dw.	Trial trip run
ULA	Royal Shell Group	16600 Disp.	Launched
GU	Burmah Oil Ltd.	6000 Dw.	Launched
JA	Anglo-Saxon Pet. Ltd. London	11800 Dw.	Launched
SADLER	National Benzole Ltd. London	308 Dw.	Trial trip run
TE MAERSK	A. P. Moller	9000 Dw.	Completed
US	Anglo-Saxon Pet. Ltd.	11800 Dw.	Completed

Old Tonnage

JAPANESE shipbreakers are still busy buying old tanker tonnage, among tonnage of other type. It is reported that this is being broken up to be used for munition making. There is a duty on imported steel in Japan, but no duty on imported old ships for breaking up. The troubles in Manchuria therefore, are now responsible for the removal, and it is a very welcome removal, of some of the world's surplus tanker tonnage. Among ships so sold mention may be made of the SCALA SHELL, of 3,585 tons gross built in 1902, which has brought about £4,500 with delivery at Japan. Mention may also be made of the ANAMBA, a vessel of 1,855 tons gross, built in 1902 and sold by the Anglo-Saxon Company to Japanese shipbreakers for about £2,700.

New Tonnage

WITH regard to new tonnage, shipbuilders in this country and on the Continent report the market virtually devoid of inquiry. There are persistent rumours in shipping circles in London that inquiries are being circulated for a single-screw motor-tanker of about 2,000 hp., but mature reflection makes the crediting of such a report very difficult indeed. If any temporary revival comes within the next few months then it is probable that this will be in coastwise ships. Russian Oil Products have been reported for some considerable time to be in the market for new tonnage and should any improvements show themselves, contracts may be placed.

A small oil tanker of about 3,000 tons d.w.c has recently been ordered from the Furness Shipbuilding Company by the Imperial Oil Company of Toronto.

Chartering

AT the time of dispatching this report, the tanker freight market is slightly better than it has been possible to report hitherto. Early in December there was a fair demand for tonnage for the carriage of both clean and dark oils and a fair amount of fixing has taken place. The bulk of tonnage chartered, however, has been for the carriage of clean oil but owing to the over-supply of tonnage, freight rates are still unprofitable.

United States

DURING 1931 the Sun Shipbuilding and Dry Dock Company completed three 9000-ton Sun-Doxford Diesel tankers for the Motor Tankship Corporation, and one 9100-ton similarly propelled tanker for the Socony-Vacuum Transportation Corporation, while the Bethlehem Shipbuilding Corporation delivered a 6100-ton steam tanker to the Sinclair Navagation Company. Tankers now building include a 1200-ton Diesel boat for Socony-Vacuum at Bethlehem's Fore River yard, and three 9000-ton motor vessels for the Motor Tanker Corporation at the Sun yard, Chester, Pa. Work on one or more of the latter may be delayed.

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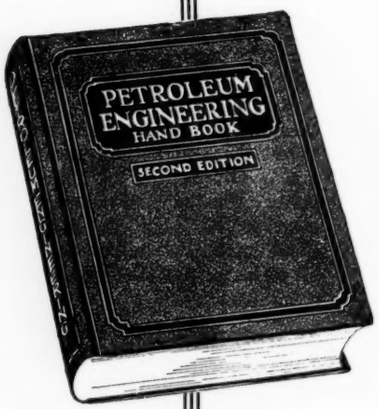

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